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PATENTS

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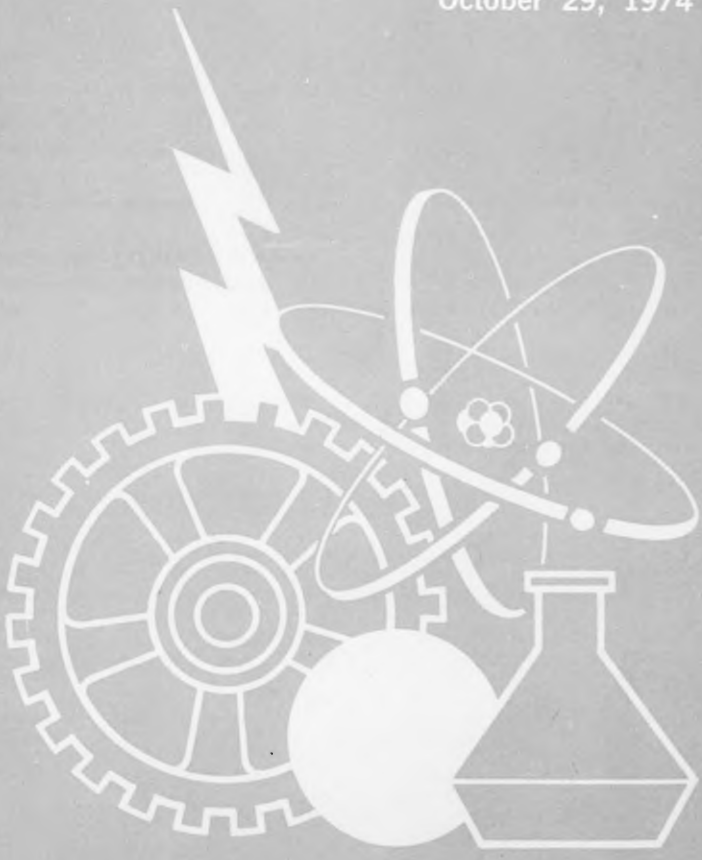

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October 29, 1974 Volume 927 Number 5

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PATENT OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,647,590, C. A. Anderson, Jr., HYDRAULIC ELEVATOR, **filed** Sept. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2354, *Advanced Hydraulics, Inc.* v. *Hyster Company.* Enter order on stipulation motion to dismiss complaint and counterclaim with prejudice granted, Mar. 26, 1974.

2,809,100, G. J. Krasl, COMBUSTION ANALYZER, **filed** Mar. 27, 1974, D.C., W.D. Mich. (Grand Rapids), Doc. K74–106 CAB, *Leco Corporation* v. *Philip Cicero, doing business as Cicero Scientific Glass.*

2,859,949, J. J. Willard, FORWARD DISCHARGING TRANSIT CONCRETE MIXER, **filed** Apr. 5, 1974, D.C., N.D. Ind. (Fort Wayne), Doc. F 74–35, *R. W. Sims, trustee and R. W. Sims Trust* v. *Irving Ready-Mix, Inc., Advance Mixers, Inc. and Irving Materials, Inc.*

3,002,615, J. H. Lemelson, EXTRUSION APPARATUS; **3,252,181,** J. Hureau, APPARATUS FOR THE PRODUCTION OF PROFILED PIECES SHOWING A LACUNAR OR RETICULATED STRUCTURE; **3,349,434,** same, EXTRUSION OF ARTICLES WITH RIBBED FULL WALLS; **3,381,337,** same, APPARATUS FOR THE PRODUCTION OF PROFILED PIECES SHOWING A LACUNAR OR RETICULATED STRUCTURE; **3,384,692,** Galt and Lundsager, METHOD FOR PRODUCING SQUARE-MESH NET STRUCTURE; **3,496,965,** J. Hureau, EXTRUDED PLASTIC TUBULAR STRUCTURE HAVING A RECTANGULAR MESH APERTURED WALL; **3,557,403,** J. H. Lemelson, COMPOSITE EXTRUSION APPARATUS AND METHOD; **3,587,281,** same, EXTRUSION DIE APPARATUS; **Re. 25,570,** same, EXTRUSION APPARATUS, **filed** Jan. 10, 1974, D.C. Minn. (Minneapolis), Doc. 4–74–C–20, *Conwed Corporation* v. *Nortene S.A. et al.*

3,134,583, R. W. Wilson, APPARATUS FOR BULK CURING TOBACCO; **3,244,445,** same, APPARATUS FOR SUPPORTING TOBACCO LEAVES IN BULK FORM FOR CURING, **filed** Apr. 1, 1974, D.C., M.D. Fla. (Jacksonville), Doc. 74–221–C–J–T, *Powell Manufacturing Company, Inc.* v. *Live Oak Gas Company.*

3,183,529, G. Beuchat, SWIMMER'S FOOT-FIN WITH THRUST-ACCELERATING DEVICE; **3,603,306,** R. J. Bonin, Jr., SNORKEL, **filed** July 3, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1261–LTL, *U.S. Divers Company* v. *Under Sea Industries.* Filed plaintiff's notice of dismissal with prejudice entered Dec. 5, 1973.

3,244,445. (See 3,134,583.)

3,252,181. (See 3,002,615.)

3,349,434. (See 3,002,615.)

3,381,337. (See 3,002,615.)

3,384,692. (See 3,002,615.)

3,462,198, G. R. Onufer, BALANCER FOR ROTATING BODY; **3,581,782,** same, VAPOR EMISSION CONTROL SYSTEM, **filed** Feb. 9, 1973, D.C., E.D. Mich. (Detroit), Doc. 39650, *Russell, Burdsall & Ward Bolt & Nut Co.* v. *Geo. R. Onufer.*

3,496,965. (See 3,002,615.)

3,530,887, P. E. Stratman, QUICK DISCONNECT COUPLING; **3,646,964,** same, COUPLING DEVICE FOR PERMITTING COUPLING UNDER TRAPPED PRESSURE; **Re. 27,635,** L. A. Kopaska, COUPLING DEVICE, **filed** Apr. 5, 1974, D.C., W.D. Pa. (Erie), Doc. C.A. 74–0026, *Parker-Hannifin Corporation* v. *Snap-Tite, Inc.*

3,557,403. (See 3,002,615.)

3,581,782. (See 3,462,198.)

3,603,306. (See 3,183,529.)

3,638,836, C. W. Vickers III, COMBINED FLASHLIGHT AND CHEMICAL EXPELLING DEVICE, **filed** June 28, 1973, D.C., M.D. Fla. (Jacksonville), Doc. 73–511–C–J–T, *Percy Rosenbloom, Jr.* v. *Central Florida Merchandise Mart, Inc.*

3,646,964. (See 3,530,887.)

3,659,284, W. T. Rusch, TELEVISION GAMING APPARATUS; **2,659,285,** Baer, Rusch and Harrison, TELEVISION GAMING APPARATUS AND METHOD, **filed** Apr. 15, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1030, *The Magnavox Company* v. *Bally Manufacturing Company et al.*

3,659,285. (See 3,659,284.)

3,672,256, W. B. Kosmowski, CENTRIFUGAL CHUCK DEVICE; **3,687,467,** same, COLLET; **3,795,455,** same, MACHINE TOOL HAVING CENTRIFUGALLY ACTUATED COLLET, **filed** Mar. 26, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–787–R, *Digital Systems, Inc.* v. *Advanced Controls Corp. et al.*

3,683,463, Siefer and Bryant, INTERSTACK BRIDGE AND SHORE FOR CARGO CONTAINERS, **filed** Sept. 14, 1973, D.C., N.D. Calif. (San Francisco), Doc. C73–1639 RHS, *Paul E. Siefer and Claudis Bryant* v. *American President Lines and Vulcan Steel Foundry.* Final judgment in favor of defendant and counterclaimants, patent has not been infringed by defendants, Apr. 4, 1974.

3,687,467. (See 3,672,256.)

3,795,455. (See 3,672,256.)

Re. 25,570. (See 3,002,615.)

Re. 27,462, J. Gutierrez, SELF-ACTUATING RECORD HOLDING APPARATUS; **D. 225,097,** same, PHONOGRAPH RECORD HOLDER, **filed** Mar. 26, 1973, D.C. Minn. (Minneapolis), Doc. 4–73–C–178, *Julian Gutierrez* v. *K-Tel International, Inc.*

Re. 27,635. (See 3,530,887.)

D. 225,097. (See Re. 27,462.)

2,658,742, Suter and Ruff, CATALYTIC FUME INCINERATION; **2,270,494,** same, PROCESS OF PREPARING CATALYTIC ELEMENTS, **filed** July 9, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1663, *Universal Oil Products Co.* v. *Catalytic Products Intl. et al.* Action including the complaint and counterclaim is hereby dismissed with prejudice, Aug. 17, 1971.

2,720,494. (See 2,658,742.)

2,811,069, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, **filed** Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c137, *Alfred H. Faulkner* v. *Thomas Organ Co.*

2,864,990, A. D. Hill, AUTOMATIC PILOT; **2,973,413,** same, COMPASS SUSPENSION FOR AUTOMATIC PILOT; **3,018,750,** same, MERCURY SWITCH CONTROL FOR ELECTRICALLY GOVERNED RUDDER, **filed** Apr. 2, 1974, D.C., C.D. Calif. (Los Angeles), Doc. C–74–869–JWC, *Ann M. Hill* v. *Robert Baltierra.*

2,907,407, Engle and Swanton, Jr., FILTER CONSTRUCTION; **3,685,355,** K. W. De Baun, AIR MONITORING SYSTEM, **filed** May 8, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–0987 CBR, *Air Monitor and Servodyne Corp.* v. *Cambridge Filter Corp., Air Filter Control Inc., et al.*

2,973,413. (See 2,864,990.)

2,985,245, R. P. Maloof, PROPELLER FAN; **Reg. No. 788,738** (TROPIC BREEZE), National Frost Protection Co., Inc., **filed** Apr. 9, 1974, D.C., E.D. Wash. (Spokane), Doc. C–74–86, *SSP Agricultural Equipment, Inc.* v. *Orchard-Rite Ltd.*

3,018,750. (See 2,864,990.)

3,052,319, R. K. Swanson, CANTILEVER SHOPPING CART AND COUNTER ASSEMBLY; **3,517,778,** same, CHECK-OUT SYSTEM AND COUNTER FOR USE WITH CANTILEVER SHOPPING CART, **filed** Oct. 27, 1970, D.C., W.D. Okla. (Oklahoma City), Doc. 70–530–C, *Russell K. Swanson and United Steel & Wire Company* v. *Folding Carrier Corporation.* Judgment entered May 22, 1972 reversed and cause remanded. Plaintiff is owner of patent and defendant is permanently enjoined from infringing said patent during remaining term thereof, Dec. 12, 1973.

3,178,781, Masi and Diprinzio, deceased, by Antonetta M. Diprinzio, executrix, FOUNDRY MACHINES; **3,417,811,** A. Masi, MATCHPLATE SUPPORT ASSEMBLY; **3,695,338,** same, MOLDING MACHINE, **filed** Mar. 14, 1973, D.C., W.D. Pa. (Erie), Doc. C.A. 27–73, *Anthony S. Masi* v. *Harrison Machine Company.* Case marked settled and discontinued with prejudice, Mar. 19, 1974.

3,250,205, R. R. Lambert, STRIP-TYPE AIR DIFFUSER; **3,406,623,** same, PLENUM AIR DIFFUSER ASSEMBLY, **filed** May 7, 1974, D.C., W.D. Mo. (Kansas City), Doc. 74CV–224–W–2, *Wehr Corporation* v. *Tempmaster Corporation.*

3,377,626, R. E. Smith, INSULATED GOGGLES, **filed** Mar. 15, 1974, D.C. Idaho (Boise), Doc. C–1–74–40, *Robert E. Smith and Smith Goggle Co., Inc.* v. *Scott USA Inc. and Kingsford Company.*

3,406,623. (See 3,250,205.)

3,417,811. (See 3,178,781.)

3,492,014, K. Von Besser, SAFETY SKI BINDING; **Re. 27,991,** same, **filed** Apr. 30, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–0922 SAW, *Saska Sports Industries, Inc.* v. *Safety Systems, Inc.*

3,517,773. (See 3,052,319.)

3,552,154, B. G. Lesley, KNIT FABRIC, **filed** Mar. 28, 1972, D.C., W.D.N.C. (Statesville), Doc. ST–C–72–10, *Deering Milliken Research Corporation* v. *Beaunit Corporation.* Memorandum of decision—It's ordered, adjudged and decreed that each and every claim of U.S. patent is valid and infringed by defendant. A separate trial on the issues of the relief prayed for by plaintiff is scheduled, May 13, 1974.

3,611,444, C. T. Rector, DETACHABLE POCKET FOR WEARING APPAREL; **3,643,264,** same, UNDERWATER DIVING GARMENT CONSTRUCTION, **filed** Sept. 10, 1973, D.C., W.D. Wash. (Seattle), Doc. 545–73C2, *Carl T. Rector* v. *Imperial Manufacturing Company and James E. Hill.* Stipulation of partial dismissal of patent filed Apr. 22, 1974.

3,643,264. (See 3,611,444.)

3,685,355. (See 8,907,407.)

3,695,338. (See 3,178,781.)

3,730,937, Boggs and Miller, ELASTOMERIC CORROSION-INHIBITING COATING AND SEALING MATERIAL, **filed** Apr. 24, 1974, D.C. Del. (Wilmington), Doc. 74–81, *Products Research & Chemical Corporation* v. *Teledyne, Inc.*

3,736,879, J. E. Anderson, BALLAST TAMPER BLADE, **filed** Apr. 25, 1974, D.C. Nev. (Reno), Doc. R–74–52, *Jackson Vibrators, Inc.* v. *M.W. Tool Co.*

3,780,482, C. J. DeLange, PREFABRICATED STRUCTURAL UNIT AND METHOD, **filed** May 7, 1974, D.C., E.D. Mich. (Detroit), Doc. 74–71608, *Cement Enamel Development, Inc.* v. *International Thermoset Co., Ltd. and Sund Construction Co.*

3,783,449, R. C. Davis, BULLET-PROOF PROTECTIVE ARMOR AND METHOD OF MAKING SAME, **filed** May 7, 1974, D.C., E.D. Mich. (Detroit), Doc. 74–71607, *Second Chance Body Armor Inc. and Richard C. Davis* v. *Life Shield Corp. et al.*

Re. 27,991. (See 3,492,014.)

Reg. No. 788,738. (See 2,985,245.)

Certificates of Correction for the Week of Oct. 29, 1974

P.P. 3,574	3,765,534	3,791,016	3,805,546	3,814,142	3,819,405	3,823,233	3,826,779
Re. 27,667	3,766,213	3,791,283	3,805,686	3,814,290	3,819,417	3,823,255	3,826,942
Re. 27,950	3,767,706	3,791,569	3,805,689	3,814,302	3,819,613	3,823,266	3,827,026
Re. 28,060	3,767,744	3,792,000	3,806,135	3,814,385	3,819,653	3,823,279	3,827,034
D. 227,701	3,767,750	3,792,051	3,806,233	3,814,531	3,819,674	3,823,354	3,827,229
D. 232,477	3,768,311	3,792,098	3,806,251	3,814,592	3,819,682	3,823,384	3,827,247
D. 232,493	3,769,850	3,792,320	3,806,365	3,814,711	3,819,693	3,823,589	3,827,296
3,365,440	3,770,001	3,792,375	3,806,493	3,814,712	3,819,700	3,823,599	3,827,366
3,508,917	3,770,237	3,793,051	3,806,542	3,814,729	3,819,716	3,823,626	3,827,507
3,518,067	3,770,779	3,793,083	3,806,643	3,814,908	3,819,770	3,823,662	3,827,559
3,562,406	3,771,605	3,793,374	3,806,695	3,814,922	3,819,786	3,823,741	3,827,729
3,581,464	3,772,222	3,793,836	3,806,933	3,815,033	3,819,872	3,823,759	3,827,760
3,610,420	3,773,802	3,793,909	3,807,060	3,815,085	3,819,948	3,823,824	3,827,890
3,627,798	3,774,156	3,794,231	3,807,124	3,815,092	3,820,041	3,823,872	3,827,934
3,628,846	3,775,041	3,794,668	3,807,217	3,815,163	3,820,063	3,823,876	3,827,992
3,637,752	3,775,053	3,795,074	3,807,244	3,815,377	3,820,091	3,823,884	3,828,024
3,653,622	3,775,258	3,795,348	3,807,382	3,815,439	3,820,115	3,823,907	3,828,115
3,660,344	3,775,465	3,795,531	3,807,408	3,815,601	3,820,241	3,823,922	3,828,135
3,661,867	3,777,211	3,795,722	3,807,816	3,815,623	3,820,407	3,824,132	3,828,204
3,679,733	3,777,296	3,795,751	3,807,860	3,815,738	3,820,439	3,824,171	3,828,286
3,696,089	3,777,856	3,796,160	3,808,006	3,815,742	3,820,597	3,824,173	3,828,321
3,696,905	3,778,173	3,796,168	3,808,094	3,815,746	3,820,599	3,824,233	3,828,345
3,698,250	3,778,280	3,796,257	3,808,153	3,815,763	3,820,642	3,824,401	3,828,536
3,702,100	3,778,582	3,796,578	3,808,212	3,815,821	3,820,728	3,824,421	3,828,564
3,703,958	3,778,702	3,796,700	3,808,354	3,815,983	3,820,799	3,824,501	3,828,621
3,719,182	3,779,776	3,797,028	3,808,570	3,816,068	3,820,808	3,824,516	3,828,661
3,720,989	3,779,984	3,797,115	3,808,703	3,816,077	3,820,886	3,824,526	3,828,733
3,721,608	3,780,126	3,797,305	3,809,146	3,816,142	3,820,895	3,824,552	3,828,738
3,725,013	3,781,219	3,797,576	3,809,270	3,816,187	3,820,965	3,824,563	3,828,743
3,725,125	3,871,278	3,797,628	3,809,382	3,816,188	3,821,036	3,824,585	3,828,778
3,725,684	3,781,326	3,797,637	3,809,526	3,816,344	3,821,093	3,824,594	3,828,796
3,733,280	3,781,331	3,797,996	3,809,592	3,816,384	3,821,113	3,824,604	3,828,797
3,735,186	3,781,389	3,798,329	3,809,691	3,816,404	3,821,177	3,824,608	3,828,860
3,736,775	3,781,453	3,799,219	3,809,821	3,816,476	3,821,195	3,824,611	3,828,904
3,738,336	3,781,632	3,799,434	3,809,861	3,816,533	3,821,198	3,824,700	3,828,951
3,740,210	3,782,406	3,799,920	3,809,981	3,816,575	3,821,211	3,824,841	3,829,124
3,740,809	3,782,865	3,799,951	3,810,006	3,816,644	3,821,233	3,824,843	3,829,158
3,740,985	3,783,331	3,799,970	3,810,008	3,816,674	3,821,241	3,824,871	3,829,187
3,741,626	3,783,701	3,800,078	3,810,023	3,817,021	3,821,328	3,824,911	3,829,281
3,745,009	3,783,796	3,800,323	3,810,025	3,817,039	3,821,422	3,824,919	3,829,286
3,746,645	3,784,110	3,800,683	3,810,104	3,817,158	3,821,484	3,824,947	3,829,293
3,747,487	3,784,360	3,800,775	3,810,158	3,817,246	3,821,488	3,824,957	3,829,410
3,748,322	3,784,519	3,800,111	3,810,173	3,817,303	3,821,606	3,825,046	3,829,411
3,749,960	3,784,549	3,801,144	3,810,693	3,817,414	3,821,705	3,825,076	3,829,505
3,753,294	3,784,612	3,801,161	3,810,697	3,817,510	3,821,895	3,825,112	3,829,508
3,753,864	3,785,092	3,801,475	3,810,922	3,817,566	3,821,945	3,825,120	3,829,666
3,754,008	3,785,356	3,801,573	3,811,007	3,817,645	3,822,004	3,825,269	3,829,689
3,754,215	3,785,580	3,801,967	3,811,242	3,817,707	3,822,144	3,825,271	3,829,759
3,755,320	3,785,583	3,802,389	3,811,290	3,817,740	3,822,173	3,825,275	3,829,783
3,755,413	3,785,820	3,802,450	3,811,398	3,817,890	3,822,209	3,825,373	3,829,833
3,755,452	3,785,834	3,802,705	3,811,416	3,817,972	3,822,225	3,825,516	3,830,234
3,755,955	3,785,840	3,803,155	3,811,450	3,817,983	3,822,248	3,825,523	3,830,377
3,756,700	3,785,914	3,803,258	3,811,467	3,818,093	3,822,308	3,825,654	3,830,607
3,757,162	3,786,449	3,803,296	3,811,543	3,818,152	3,822,356	3,825,685	3,830,708
3,759,411	3,786,462	3,803,501	3,811,578	3,818,207	3,822,439	3,825,741	3,830,730
3,759,880	3,786,792	3,803,608	3,811,600	3,818,237	3,822,454	3,825,747	3,830,813
3,760,041	3,787,299	3,803,823	3,811,602	3,818,319	3,822,475	3,825,792	3,830,875
3,760,183	3,787,420	3,803,975	3,811,848	3,818,384	3,822,602	3,825,818	3,830,941
3,760,358	3,787,458	3,804,145	3,812,093	3,818,392	3,822,656	3,825,867	3,830,946
3,761,419	3,787,659	3,804,251	3,812,110	3,818,450	3,822,691	3,825,904	3,831,038
3,761,576	3,787,761	3,804,514	3,812,239	3,818,463	3,822,764	3,825,941	3,831,072
3,762,254	3,788,667	3,804,605	3,813,024	3,818,676	3,822,808	3,825,942	3,831,077
3,762,850	3,788,943	3,804,638	3,813,076	3,818,835	3,822,829	3,825,986	3,831,272
3,762,928	3,789,476	3,804,780	3,813,086	3,819,246	3,822,910	3,826,365	3,831,483
3,763,435	3,789,612	3,804,823	3,813,116	3,819,277	3,823,028	3,826,422	3,831,950
3,764,083	3,789,493	3,804,825	3,813,353	3,819,340	3,823,031	3,826,599	3,832,023
3,764,428	3,790,530	3,805,028	3,813,590	3,819,350	3,823,080	3,826,663	3,832,276
3,764,471	3,790,584	3,805,142	3,813,909	3,819,353	3,823,220	3,826,688	3,832,366
3,764,986	3,790,808	3,805,472	3,814,107	3,819,401	3,823,224	3,826,736	3,832,566

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Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF THE ARMY
Chief, Patents Division, Pentagon,
Washington, D.C. 20310

Patent 3,732,727. Method and Apparatus for Testing the Tenderness of Meat. Filed Dec. 7, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,732,841. Explosively Embedded Anchor. Filed Mar. 26, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,732,846. Crystal Plating Monitoring System. Filed Jan. 7, 1972. Patented May 15, 1973. Not available NTIS.

Patent 3,733,447. Tilt Responsive Inertia Switch With Printed Circuit and Movable Ball Contact. Filed Dec. 2, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,735,004. Hepatitis Vaccine. Filed Nov. 1, 1971. Patented May 22, 1973. Not available NTIS.

Patent 3,735,359. Digital Conference Bridge. Filed July 30, 1971. Patented May 22, 1973. Not available NTIS.

Patent 3,736,129. Alloy Steel. Filed May 13, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,736,177. Water and Oil-Resistant, Antistatic and Abrasion-Resistant Finish for Nylon Fabrics. Filed May 12, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,738,011. Thickness-Scratch Testing Device. Filed Aug. 23, 1971. Patented June 12, 1973. Not available NTIS.

Patent 3,738,162. Fatigue Damage Indicator. Filed Sept. 10, 1971. Patented June 12, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 443,077. Low-Temperature, Low Pressure Hydrogen Gettering. Filed Feb. 15, 1974. PC $4/MF $1.45.

Patent application 446,068. Light Beam Translator. Filed Feb. 26, 1974. PC $4/MF $1.45.

Patent 3,775,816. Method of Making a Molded Piezoelectric Transducer Assembly. Filed July 27, 1972. Patented Dec. 4, 1973. Not available NTIS.

Patent 3,776,831. Device for Measuring Oxygen Activity in Liquid Sodium. Filed Nov. 15, 1972. Patented Dec. 4, 1973. Not available NTIS.

Patent 3,778,254. Brazing Filler Metal for Molybdenum. Filed Nov. 18, 1971. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,778,366. Process for Treatment of Aqueous Suspensions. Filed May 28, 1971. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,778,497. Plutonium Recovery From Organic Materials. Filed July 28, 1972. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,778,499. Atmosphere Purification of Radon and Radon Daughter Eelements. Filed Apr. 13, 1971. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,780,256. Method for Producing Spike-Free Electron Beam Partial Penetration Welds. Filed Aug. 8, 1972. Patented Dec. 18, 1973. Not available NTIS.

Patent 3,781,403. Recovery of Protactinium From Molten Fluoride Nuclear Fuel Compositions. Filed Nov. 30, 1971. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,404. Americium Recovery From Reduction Residues. Filed May 18, 1972. Patented Dec. 25, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Chief, Research Agreements and Patent Mgmt Branch,
Hyattsville, Md. 20782

Patent application 275,010. Lithium Polycyanoethlated Keto Fatty Soap Based Greases. Filed July 25, 1972. P.C. $4/MF $2.25.

Patent application 391,181. Difunctional Fatty Soap Based Greases. Filed Aug. 24, 1973. PC $4/MF $2.25.

Patent application 41,573. Process for the Preparation of Beta Dicarbonyl Compounds. Filed Nov. 15, 1973. PC $4/MF $2.25.

Patent 3,745,195. Process for Equilibrating Allene and Methyl-Acetylene and for Recovery of Pure Allene From the Equilibrium Mixture. Filed Aug. 31, 1971. Patented July 10, 1973. Not available NTIS.

U.S. DEPARTMENT OF INTERIOR
Branch of Patents, 18th and C Sts.,
Washington, D.C. 20240

Patent application 474,997. Process for Producing Alumina by Decomposition of Aluminum Nitrate Nonahydrate. Filed May 31, 1974. PC $4/MF $1.45.

Patent 3,821,036. Oxyreaction Strengthening of Metals. Filed May 15, 1972. Patented June 28, 1974. Not available NTIS.

TENNESSEE VALLEY AUTHORITY
Division of Law, Muscle Shoals, Ala. 35660

Patent 3,825,414. Urea-Ammonium Polyphosphate Production. Filed Dec. 10, 1973. Patented July 23, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters,
Washington, D.C. 20545

Patent application 387,266. Real Time, Large Volume, Moving Scene Holographic Camera System. Filed Aug. 10, 1973. PC $4.75/MF $1.45.

Patent application 484,208. An Ndir Gas Analyzer Based on Absorption Modulation Ratios for Known and Unknown Samples. Filed June 28, 1974. PC $4.25/MF $1.45.

[F.R. Doc. 74-23559; Filed 10-8-74; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 12, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds: Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-10-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides, Acid Halides.	9-10-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding, Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry: Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-7-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-6-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-2-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing: Indicating.	1-2-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy: Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	1-2-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-28-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches: Power Transmission; Fluid Handling and Control; Lubrication.	1-29-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks: Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-11-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,807,804 to 2,811 721, inclusive
Plant Patents..... Numbers 1,646 to 1,655, inclusive

REISSUES

OCTOBER 29, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,212
POLYAMIDES CONTAINING ANTISTATIC POLYOLEFINS HAVING PENDANT POLYOXYALKYLENE CHAINS

Pierre Grosjean, Ste.-Foy-les-Lyon, France, assignor to Societe Rhodiaceta, Paris, France

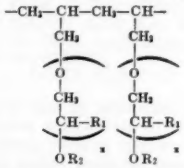
No Drawing. Original No. 3,641,198, dated Feb. 8, 1972, Ser. No. 64,600, Aug. 17, 1970. Application for reissue June 7, 1973, Ser. No. 367,958

Claims priority, application France, Aug. 22, 1969, 6928876

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PG **5 Claims**

1. An antistatic and anti-soiling composition comprising a thermoplastic linear polyamide and from about 1 percent to about 10 percent by weight based on the weight of the total composition of a polyolefin having pendant polyoxyalkylene chains having an average molecular weight higher than 1000 and consisting essentially of the repeating structural unit of the formula:



wherein R_1 is selected from hydrogen and methyl; R_2 is selected from hydrogen, alkly and aryl; and x is an integer of 1 to 600.

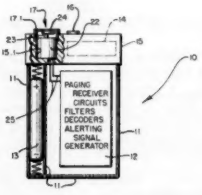
28,213
PAGING RECEIVER HAVING CYCLING MASS

Sholly Kagan, East Natick, Mass., assignor to Bell & Howell Company, Chicago, Ill.

Original No. 3,623,064, dated Nov. 23, 1971, Ser. No. 766,781, Oct. 11, 1968. Application for reissue Aug. 15, 1973, Ser. No. 388,456

Int. Cl. G08b *7/00*

U.S. Cl. 340—311 **15 Claims**



1. A personal paging device comprising a supporting structure, sensing means carried by said structure and responsive to space-transmitted energy for providing an alerting signal comprising a train of regularly spaced electrical pulses, normally inactive vibrator means for vibrating said structure, said vibrator means including an eccentric mass supported for cyclic movement and electric motive means responsive to said alerting signal for driving said mass through a range of vibrational frequencies toward a steady-state frequency, each of said pulses in said alerting signal being of a length to endure for a period of time longer than a cycle of said [signal at said steady] *vibrator means at said steady* state frequency of vibrator.

28,214
ELECTROENCEPHALOGRAPH MONITORING APPARATUS

Douglas Edward Maynard, Wentworth, Stoke Poges Lane, England

Original No. 3,699,947, dated Oct. 24, 1972, Ser. No. 162,165, July 13, 1971, which is a continuation-in-part of abandoned application Ser. No. 771,192, Oct. 28, 1968. Application for reissue Apr. 25, 1973, Ser. No. 354,461

Claims priority, application Great Britain, Oct. 31, 1967, 49,301/67

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.1 B **16 Claims**

1. Apparatus for monitoring electric signals in the human brain, comprising:

a pair of electrodes adapted to be fixed to the scalp,

filter means coupled to said electrodes, having a frequency versus loss characteristic in which loss decreases with increasing frequency so as to, in operation, substantially equalize the ampliture of the filter output signals due to random electrical activity of the brain, the said decrease in loss with increase in frequency being from a low frequency designated the lower predetermined frequency, to a high frequency designated the upper predetermined frequency, the upper and lower predetermined frequencies being below 30 c/s and above 0.3 c/s, respectively, and loss below the lower predetermined frequency, and above the upper predetermined frequency, being greater than the loss at the lower and upper predetermined frequencies, respectively,

amplifying means for amplifying signals which pass through said filter means, and indicator means for indicating the magnitude of signals from said amplifying means.

28,215
TAPE DIVERTING DEVICE IN A TAPE RECORDER APPARATUS WITH DRUM SHIFT DURING TAPE ENGAGEMENT

Walter Eibensteiner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Original No. 3,681,539, dated Aug. 1, 1972, Ser. No. 56,490, July 20, 1970. Application for reissue Oct. 12, 1972, Ser. No. 296,763

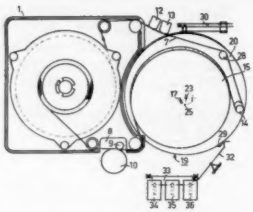
Claims priority, application Austria, Aug. 4, 1969, A 7,474/69

Int. Cl. G11b *15/66, 23/04*

U.S. Cl. 360—85 **34 Claims**

1. In an apparatus for recording and/or playback of signals having a wide frequency spectrum carried on a tape carrier accommodated in a cassette, said cassette

having an opening across which said tape will extend when not in the operative playback condition, said apparatus comprising a base for supporting thereon said cassette, a drum having a cylindrical surface supported on said base adjacent said cassette, said tape being helically wound thereabout when in an operative position, a tape diverting device movable between an inoperative condition and an operative condition for engaging and drawing a portion of said tape out of said cassette and around part of said drum surface in a helical path, said device comprising a support member formed integrally with said drum and being arranged on said apparatus for pivotal movement about an axis of rotation which is parallel to the longitudinal axis of said drum and offset therefrom, said longitudinal axis of said drum



being shifted from a position further from the cassette than the axis of said supporting member prior to moving the tape diverting device to the operative condition to a position closer to said cassette than the axis of said supporting member when said supporting member and drum have been pivoted about said supporting member axis and said tape has been wound about the surface of said drum, and at least one tape guide stud mounted on said support member, said stud projecting through said cassette opening when said cassette is placed in a position on said apparatus for playback, whereby said tape stud will engage said tape and draw said tape out of the cassette and wrap said tape about a portion of said drum as said support member is pivoted about said axis of rotation so that said tape will be wound about said drum in a helical path and into an operative position for playback.

28,216

SPECTROMETER

Anthony Rene Barringer, Willowdale, Ontario, Canada, and Josef Pep Schock, Cambridge, Mass., assignors to Barringer Research Limited, Rexdale, Ontario, Canada

Original No. 3,518,002, dated June 30, 1970, Ser. No. 654,202, July 18, 1967, which is a continuation-in-part of abandoned application Ser. No. 559,792, June 23, 1966. Application for reissue Jan. 27, 1972, Ser. No. 221,455

Int. Cl. G01j *3/42*

U.S. Cl. 356—93 **21 Claims**

1. In a spectrometer having

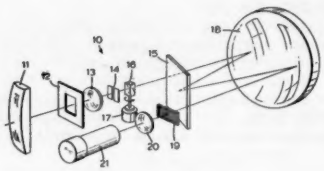
an entrance slit,

means for dispersing light passing through the entrance slit to resolve the characteristic spectra of a particular substance when the characteristic spectra are present in the light, the dispersing means including focussing means for producing a set of images of the entrance slit corresponding to said characteristic spectra, the slit images being dispersed in a given direction of dispersion and being formed in a focal plane,

mask means having a plurality of relatively opaque and transparent regions, said regions being correlative with the set of slit images corresponding to the characteristic spectra of a particular substance, the mask means being located in said focal plane, and

a photodetector positioned for receiving light which has passed through the mask means, the photodetector producing an output signal proportional to the intensity of the light shining upon it, the improvement comprising:

(a) means for cyclically varying the relative positions of the slit images and the mask means at a rapid and constant rate of repetition between a first position wherein the slit images correlate with said regions of the mask means and a second position wherein there is a slight relative displacement, in the said direction of dispersion, between the slit images and corresponding correlative regions of the mask means, whereby the intensity of the light passing through the mask means is cyclically varied



from a maximum in said first position to a minimum in said second position in response to the varying relative positions of the slit images and the mask means when the characteristic spectra are present in the light, so that said output signal of said photodetector is thereby modulated by an alternating current signal attributable to the existence of the said characteristic spectra in the light,

(b) means coupled to the photodetector for amplifying the said alternating current signal separately from other components of the said output signal, and

(c) means coupled to said amplifiying means for measuring the level of the amplified alternating current signal independently of other components in the output signal.

28,217

ANTENNA WITH ELECTRICALLY VARIABLE REFLECTOR

Robert G. Malech, Plainview, N.Y., assignor to New England Merchants National Bank, Boston, Mass.

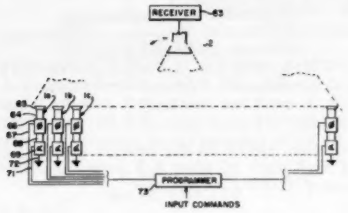
Original No. 3,259,902, dated July 5, 1966, Ser. No. 143,276, Oct. 4, 1961. Application for reissue May 6, 1968, Ser. No. 731,354, which is a continuation of abandoned reissue application Ser. No. 663,459, Aug. 16, 1967

Int. Cl. H01q *3/26*

U.S. Cl. 343—754 **5 Claims**

1. A radio frequency antenna system comprising a reflector assembly; a feed element directed toward the center of said assembly and spaced therefrom a distance between approximately one-half and one-quarter the maximum dimension of said assembly; a radio frequency transmission line connected to said feed element and adapted to be connected to antenna utilization apparatus, said assembly comprising a plurality of elemental reflector units each having a rectangular horn antenna, an electrically controllable phase control element connected to said horn antenna by waveguide transmission line to modify a signal received by said horn antenna, and signal

reflecting means connected to receive the modified signal from said horn antenna and phase control element and return it for transmission from said horn antenna; and



means for transmitting a set of control signals to the respective phase control elements to provide predetermined phase shifts of respective portions of the wave front impinging on said reflector assembly.

28,218

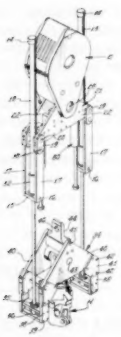
MOTION COMPENSATING APPARATUS

James W. E. Hanes, Ventura, and Edward Larralde, Santa Barbara, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Original No. 3,714,995, dated Feb. 6, 1973, Ser. No. 69,759, Sept. 4, 1970. Application for reissue Dec. 18, 1973, Ser. No. 422,871

Int. Cl. E21b 7/12

U.S. Cl. 175—5 **42 Claims**



1. In apparatus for maintaining a predetermined stress in a running string supported by a rig mounted on a vessel floating in a body of water: a motion compensator apparatus for maintaining the running string in substantially a predetermined position as the vessel heaves in the body of water, comprising an upper support carried by said rig, a lower support connectible to the running string, a plurality of cylinder means, a plurality of piston means slidable in said plurality of cylinder means, one of said plurality of means being connectible to one of said supports, the other of said plurality of means straddling and being connected to the other of said supports, and means for maintaining a fluid medium under pressure in said plurality of cylinder means on one side of said plurality of piston means as said plurality of piston means and plurality of cylinder means move longitudinally relative to one another in both longitudinal directions in response to heaving of said vessel in the body of water.

28,219

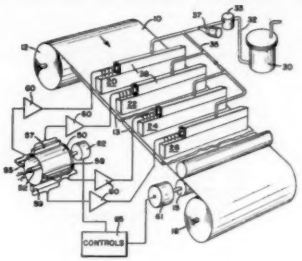
IMAGE CONSTRUCTION SYSTEM USING MULTIPLE ARRAYS OF DROP GENERATORS

Richard P. Taylor, Chillicothe, Russell H. Van Brimer, Oakwood, and Fred E. Culp, Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Original No. 3,560,641, dated Feb. 2, 1971, Ser. No. 768,790, Oct. 18, 1968. Application for reissue Oct. 24, 1972, Ser. No. 299,890

Int. Cl. G01d 15/18

U.S. Cl. 346—75 **3 Claims**



10. The method of creating a predetermined image on a receiving member such as a sheet or web by selective removal control over a large number of small liquid drops comprising the steps of:

(a) generating a plurality of longitudinally spaced and laterally extending rows of liquid jets all directed along parallel trajectories in space, each row of jets having equally spaced jets and the rows being laterally staggered to produce interlaced and longitudinally extending drop deposit patterns along the receiving member with the drop deposit patterns laterally adjoining and each pattern corresponding to a longitudinally extending line of image information within said image;

(b) moving a drop receiving member longitudinally past the jets at a constant forward speed such that successive drops in any jet will deposit on the member in adjoining positions whereby a continued deposit of successive drops will produce aforesaid drop deposit patterns in essentially continuous lines;

(c) stimulating each of such jets at a common frequency to cause each jet to break into individual drops of sufficiently close spacing for production of said continuous lines;

(d) creating within each of said drop deposit patterns a series of non printed areas corresponding to non imaged spots in the corresponding line of image information, said non printed areas being created for each drop deposit pattern by timed application of an electrical charging field to the jet associated therewith for charging of drops generated during application of said field, and deflecting and catching the drops so charged; and

(e) producing registration of the non printed areas within drop deposit patterns created by jets in different ones of said laterally extending rows by delaying the timing of charging field application to each jet for a period of time equal to the time required for the drop receiving member to travel from the rearmost row of jets to the row in which said jet is located.

28,220

REED SWITCH HAVING REED SURFACES BENEATH THE SEAL PLATED WITH A THIN SILVER LAYER

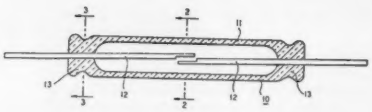
Earl Truman Ratliff, Pataskala, and Paul William Renaut, Columbus, Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Original No. 3,689,722, dated Sept. 5, 1972, Ser. No. 182,957, Sept. 23, 1971. Application for reissue Sept. 24, 1973, Ser. No. 399,843

Int. Cl. C03c *27/04;* **H01h** *51/28*

U.S. Cl. 335—154 **7 Claims**

1. A switching device including a pair of elongated nickel-iron contacts disposed with their tips in over-lapping relationship and a glass envelope hermetically encapsulating the overlapping portions of said reed contacts and joined to each of said reed contacts by a glass-to-metal seal characterized in that the surface of each reed contact,



including that portion located beneath a seal, is covered by a [thin] layer of silver [.] *having a thickness in the range of 60 to 175 microinches.*

PATENTS

GRANTED OCTOBER 29, 1974

GENERAL AND MECHANICAL

3,843,969
PERSONNEL ARMOR SUSPENSION SYSTEM

David A. George, Forest; Kenneth E. Mayerhofer, Bridgeview; Richard A. Rodzen, Bolingbrook, and Frank C. Scribano, Western Springs, all of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1973, Ser. No. 412,854
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 3 Claims

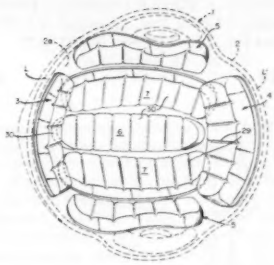
1. A personnel armor suspension system comprising: a survival vest having a back panel member and a pair of front panel members; a zipper element secured to each of said front panels; a slider element on one of said zipper elements, adapted to close said survival vest; a plurality of pockets secured to the front panel member, adapted to hold life support and survival equipment; at least one pocket member secured to the back panel member of said survival vest adapted to hold a back body armor member; a zipper element secured to said back panel adjacent the neck portion thereof; a front body armor member; a pair of zipper elements on said front body armor member with one of the zipper elements adapted to engage one of the zipper element and the slider element on said survival vest and with the other zipper element having a slider thereon adapted to engage the other zipper element on the survival vest; a back body armor member adapted to fit into a pocket on the back of said survival vest; said back body armor member having a zipper element and slider element adjacent the upper end thereof adapted to engage the zipper element on the back panel member of said survival vest.

3,843,970
PROTECTIVE HEADGEAR

Michael T. Marietta, and Charles W. Marietta, both of 5538 University Blvd., Dallas, Tex. 75209

Filed Mar. 19, 1973, Ser. No. 342,440
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R 13 Claims

1. A helmet comprising a shell, a plurality of cushion pads each of selective thickness to provide a specific sizing attached to said shell interior and including separate frontal, posterior, side and crown pads, said crown pad having a longitudinal axis extending from said frontal pad to said posterior pad, said side pads including end portions juxtaposed respectively the end portions of said frontal and posterior pads, said pads including a cover conforming to the curvature of said pads and having an inner face juxtaposed the wearer's head and an outer face juxtaposed said shell interior, a cushion filling within said cover, said cushion filling comprising a composite body including a first layer of resilient material adjacent said cover outer face and a second layer of resilient material adjacent said cover inner face, said filling first layer material of greater density and greater thickness than said

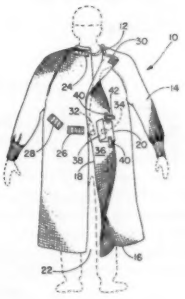


filling second layer material, said cushion filling including means adjacent the cover inner and outer faces permitting of molding said pad to provide a pad having a curvature with said cover forming a tight fit therewith, and said means includes a plurality of slices through the outer face of said first layer and a plurality of grooves in the inner face of said second layer whereby said slices permit a convex curvature of said cushion filling outer face and said grooves allow a concave curvature of said cushion filling inner face wit'i said cover forming creases within said grooves.

3,843,971
SYSTEM AND METHOD FOR OBTAINING CLOSURE OF STERILE BACKED SURGICAL GOWNS

John T. Delanty, and David Lincoln, both of Neenah, Wis., assignors to Kimberly-Clark, Neenah, Wis.

Filed July 23, 1973, Ser. No. 381,417
Int. Cl. A41b *9/00*
U.S. Cl. 2—114 5 Claims



1. In a garment for use in reducing the risk of contamination, said garment including a front panel adapted to cover the

front of the wearer, a back panel for covering the back of said wearer, a top neck opening, a bottom opening, said back panel having an opening for donning said gown between said top and bottom openings comprising panels, one of which is folded, and adapted to form an overlapped closure of said back opening, and pressure sensitive means on said folded panel for obtaining said back closure,

the improvement wherein said pressure sensitive closure means includes a protective cover releasable from said garment over said pressure sensitive means and folded about the edge of said panel containing said pressure sensitive means so as to provide means for gripping said cover.

3,843,972

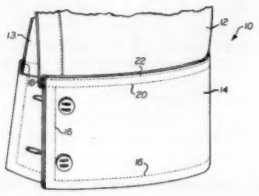
EXTENSIBLE SLEEVE CONSTRUCTION

Abraham Weinkle, 73 Park Ave., Maywood, N.J. 07607

Filed Feb. 12, 1973, Ser. No. 331,627

Int. Cl. A41b 7/04

U.S. Cl. 2—123 **10 Claims**



1. A selectively extensible cuffed sleeve construction comprising: a sleeve; a cuff attached to said sleeve by a cuff attaching running seam; a tuck taken in the sleeve, said tuck lying against a surface of said cuff; a selectively removable tuck anchoring top seam formed by a line of stitching extending through said cuff and said tuck along a line spaced from the edge of said cuff secured to said sleeve; and a selectively removable tuck anchoring running seam lying along the cuff attaching running seam, whereby the tuck will be removably anchored along a surface of said cuff, subject to selective extension to increase the effective length of said sleeve.

3,843,973

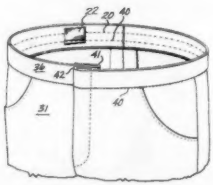
SINGLE-PIECE OVERLAPPING WAISTBAND FOR PANTS

Werner Dillenburger, Tacoma, Wash., assignor to Day's Tailor-D Clothing, Inc., Tacoma, Wash.

Filed Mar. 5, 1973, Ser. No. 338,349

Int. Cl. A41f 9/00

U.S. Cl. 2—236 **24 Claims**



1. A method for making a waistband and joining the same to garment material, the waistband including a relatively thin strip of relatively stiff banding material having first and second opposed surfaces and first and second longitudinal edges, and a relatively thin strip of cover material having exterior and interior surfaces and first and second longitudinal edges, the cover material being wider than said banding material and substantially as long, comprising the steps of:

positioning the banding material and the cover material into contact with each other, with the banding material extending in substantially the same longitudinal direction as the cover material, and with the first opposed surface of the banding material being adjacent the interior surface of the cover material, the cover material extending laterally beyond both the first and second longitudinal edges of the banding material and beyond the first longitudinal edge of the banding material a distance at least slightly greater than the width of the banding material;

securing the positioned banding material and cover material together substantially along the length thereof;

folding the banding material and the cover material relative to each other about the first longitudinal edge of the banding material, such that the second opposed surface of the banding material is adjacent the interior surface of the cover material; and

permanently securing the garment material directly to the cover material along a longitudinal line adjacent the second longitudinal edge of the banding material.

3,843,974

INTIMAL LINING AND PUMP WITH VERTICALLY DRAFTED WEBS

Walter A. Miller, and Joseph S. Byck, both of Bound Brook, N.J., assignors to The United States of America as represented by Secretary Department of Health, Education and Welfare, Washington, D.C.

Filed Jan. 5, 1972, Ser. No. 215,624

Int. Cl. A61f 1/24

U.S. Cl. 3—1 **6 Claims**

1. The intimal lining for a circulatory assist device comprising a tissue layer growing on and anchored to an elastomeric substrate with a highly porous non-woven vertically drafted web, said web having a vertical thickness dimension of about 10–50 microns and a substantial percentage of surface pores in the range 20–100 microns and in which the fibers have an average fiber diameter of about 0.05 – 1.0 micron, said web having been produced from an elongated high modulus polyolefin microfiber tape which has been vertically drafted.

3,843,975

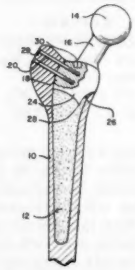
PROSTHESIS FOR FEMORAL SHAFT

Raymond G. Tronzo, 133 S. 36th St., Philadelphia, Pa. 19104

Filed Apr. 9, 1973, Ser. No. 348,936. The portion of the term of this patent subsequent to May 7, 1991, has been disclaimed.

Int. Cl. A61f 1/24

U.S. Cl. 3—1 **1 Claim**



1. In a prosthesis for a femoral shaft fixation, a ball at one end, a medullary stem at the other end, a neck connecting the

ball and the stem, a head at the connection between the stem and the neck and including means for fastening the medullary stem to the bone and outrigger knives on the head, oriented for insertion into the bone, having on the outside surface of the medullary stem from 20 to 50 percent pore area, at least 100 microns in depth of pores, between 20 and 40 percent of the surface pore area being small pores of between 50 and 200 microns diameter, between 20 and 40 percent of the surface pore area being intermediate pores of between about 200 and 800 microns in diameter, and between 20 and 40 percent of the surface pore area being large pores exceeding 800 and not exceeding 3500 microns in diameter.

3,843,976

METHOD OF AND AN APPARATUS FOR SAVING WATER USED IN TOILETS

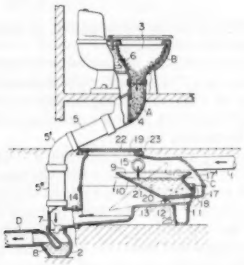
Masami Miya; Shigeru Nemoto, and Masanori Otsuka, all of Tokyo, Japan, assignors to Nepon Kabushiki Kaisha (Nepon Company Ltd.), Tokyo, Japan

Filed Sept. 24, 1973, Ser. No. 398,502

Claims priority, application Japan, Mar. 3, 1973, 48-25549; Mar. 3, 1973, 48-26868[U]; Mar. 3, 1973, 48-26869[U]; Apr. 12, 1973, 48-43165[U]; May 5, 1973, 48-53686[U]

Int. Cl. A47k *17/00*

U.S. Cl. 4—1 **18 Claims**



1. A device for utilizing waste water from kitchen sinks, wash basins, showers and the like for the purpose of flushing toilets, comprising a housing having top inlet means connectable to toilet means, a container open at its top in said housing, a waste-water line entering said housing at a region such that said waste water pours into said container, said housing having an outlet proximate the bottom thereof, and a trap connected to said outlet and connectable to a sewer line, said container having pivot means and said housing having pivot support means operatively connected with said pivot means to permit said container to cycle between a fill position and a dump position, said container having a sloping face oriented toward said outlet proximate the bottom of said housing, said container being so shaped that when the level of waste water therein is below a predetermined height, said container remains in rest position and when said level rises beyond said predetermined height, the center of gravity of said container and water content therein moves to a position between said pivot means and said outlet, thereby initiating a dump cycle which consists of firstly causing said container to rotate toward said outlet and dump rapidly the waste water contained therein for outflow through said outlet and reposition said center of gravity on the side of said pivot means farther from said outlet, and of secondly causing said container to return to said fill position.

3,843,977

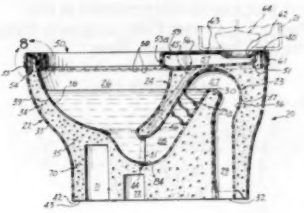
SANITARY FIXTURE

William G. Garnett, 5234 Crestwind Dr., Palos Verdes Peninsula, Calif. 90274

Filed May 11, 1973, Ser. No. 359,223

Int. Cl. E03d *11/00*

U.S. Cl. 4—69 **20 Claims**



1. A sanitary fixture comprising: a plurality of shell sections having respective outer surfaces forming parts of the exposed boundary of the fixture and inner surfaces forming part of the boundary of an internal cavity, the shell sections being assembled to form said internal cavity; and a core member in the cavity adherent to the said inner surfaces and structurally permanently interconnecting the shell sections, the shell sections being generally sheetlike in structure, the core member being made of a material which was sufficiently fluid to flow in said cavity, and settable to form a hard structure.

3,843,978

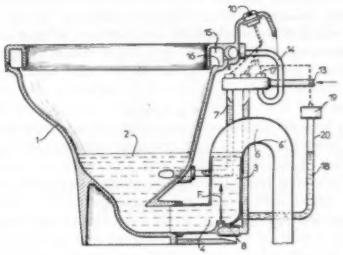
WATER-CLOSET CONSTRUCTION

Claude Ragot, Place du 11 Novembre 56, Locmine, France

Filed Aug. 27, 1973, Ser. No. 391,660

Int. Cl. E03d *11/02, 11/18*

U.S. Cl. 4—73 **8 Claims**



1. A toilet comprising

a bowl

an evacuation pipe associated with said bowl, said evacuation pipe comprising an upwardly raised part enabling a reserve of water to be maintained in said bowl, the reserve being sufficient to ensure the evacuation of the waste matter without more water having to be added,

evacuation means situated in the transition zone between the bottom of the bowl and the evacuation pipe, said evacuation means being adapted to cause the reserve of water and the waste matter to be discharged towards the evacuation pipe,

control member likely to be actuated by the user and adapted to control the action of said evacuation means, water inlet adapted to discharge fresh water into said bowl

closure valve associated with said water inlet

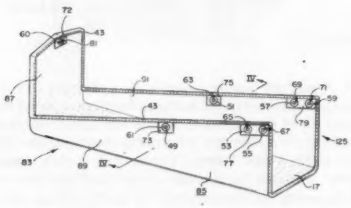
detection means adapted to check the level of the water into said bowl and remote control means interconnecting said detection means and said closure valve and adapted to command the flow of fresh water through said closure valve as long as the level of the water into said bowl is under a predetermined height.

3,843,979

BALANCED SUSPENSION SLING

John R. Treace, Los Angeles, Calif., assignor to Richards Manufacturing Co., Inc., Memphis, Tenn.

Filed Oct. 7, 1970, Ser. No. 78,686
Int. Cl. A47c *19/22*
U.S. Cl. 5—327 R 3 Claims



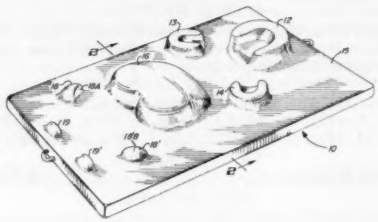
1. Apparatus for suspending the leg of a patient in a bed comprising a leg sling including a substantially rectangularly shaped sheet of flexible fabric having opposite side edges and opposite ends, said sheet being turned upwardly substantially perpendicular to the remainder of said sheet to establish an upturned foot portion and with the remainder of said sheet establishing a bottom portion having side edges and a transverse edge remote from said foot portion, a pair of substantially trapezoidally shaped side sheets of flexible fabric having upper and lower non-parallel edges and a shorter end edge and a longer end edge, said pair of side sheets being fixedly attached adjacent the lower edges thereof to said bottom portion adjacent the side edges thereof and extending perpendicularly upward from said bottom portion in parallel spaced apart relationship to establish side portions of said sling with said shorter end edge of each of said side sheets being adjacent said foot portion and attached thereto, and said longer end edge of each of said side sheets being adjacent said transverse edge of said bottom portion, said foot portion extending upwardly beyond said shorter end edges of said side sheets and being provided with at least one aperture therethrough adjacent the upper end thereof, said side portions respectively being provided with a plurality of apertures adjacent the upper edges thereof with at least one of said apertures in each of said side portions being adjacent said longer end edges to establish at least a pair of transversely aligned end apertures in said sling and with at least one of said apertures in each of said side portions being intermediate said shorter and longer end edges to establish at least a pair of transversely aligned intermediate apertures in said sling, an overhead traction means for extending longitudinally over the bed, a plurality of pulleys supported from said traction means, at least a pair of rigid hanger and spreader devices having hook means at the opposite ends thereof and an eyelet portion intermediate the ends thereof, said hanger devices being removably attached to said sling with said hook means of one of said devices extending through said intermediate apertures and with said hook means of another of said devices extending through said end apertures to hold said side portions apart, a plurality of weight means, a plurality of elongated flexible members attached respectively at one of the ends thereof to said hanger devices at said eyelet portions and to said foot portion at the aperture therein and respectively extending through said pulley means and being attached adjacent the opposite ends thereof to said weight means for balancingly suspending said sling means substantially horizontally over the bed with the patient's leg being removably received therein and with the patient's foot being adjacent said foot portion and said bottom portion extending beneath substantially the entire length of the patient's leg.

3,843,980

MATTRESS OR MATTRESS COVERING OF NOVEL SHAPE

Paul L. Rodriguez, 2116 Center St., Garden City, Kans. 67846

Filed Aug. 13, 1973, Ser. No. 388,038
Int. Cl. A47c *21/00, 23/00*
U.S. Cl. 5—327 R 3 Claims



1. A supporting device for engaging the back of a user in a reclining position comprising:

a generally rectangular horizontal mattress of resilient material having a top surface with head and foot ends,

a plurality of body supporting members integrally formed with and depending from the periphery of the top surface of said horizontal member,

said supporting members comprising a U-shaped head rest at one end of the top surface with the opening toward the foot end of the top surface, a pair of U-shaped elbow rests spaced laterally from the head rest and toward the foot end of the top surface with their openings angularly directed toward said head rest, a back rest positioned along the longitudinal axis of said horizontal member and spaced from said elbow rests and toward the foot end of the top surface, and a pair of foot rests positioned one on each side of the longitudinal axis of said horizontal member at the foot end of the top surface,

said back rest being contoured to provide a surface sloping from a point substantially at the center of said back member toward said head rest for supporting the back of the user and a substantially flat surface for supporting the hips of the user,

said supporting members being formed of a firm but resilent material.

3,843,981

TOOL

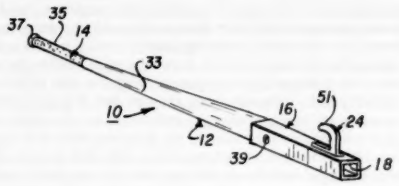
Ralph W. Verest, 4515 N. Pulaski Rd., Chicago, Ill. 60630

Filed Aug. 28, 1972, Ser. No. 284,102
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 G 8 Claims

1. A tool for use on tractor-trailer trucks employing a load binder having a release handle and employing a fifth-wheel coupler having a release handle, comprising:

an elongated member rigid throughout its length terminating at its rear end portion in a handle and terminating at its front end portion in a socket having a recess therein for receiving the load binder handle, the socket being defined by a solid tubular member; and

a hook fixedly mounted on and extending from said front end portion and adapted to engage the fifth-wheel release mechanism handle for moving it to actuate the mechanism, said hook having a base portion connected to said front end portion and having a hook-like portion including a radially-extending upstanding shank portion extending from said base portion, a reversely-bent smoothly curved portion extending backwardly therefrom and terminating in an inclined portion sloping from the outermost portion of said hook toward said base portion, the distal end portion of said inclined portion being blunt in shape and being spaced by a substantial distance from said outermost portion toward said base portion.



3,843,982

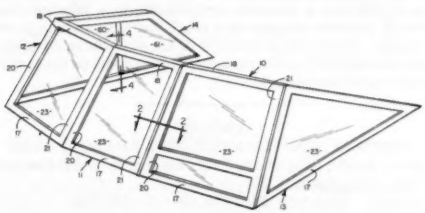
WINDSHIELD STRUCTURE

Marvin Lane, and E. Thomas Willard, both of Waxachachie, Tex., assignors to Nelson A. Taylor Co., Gloversville, N.Y.

Continuation-in-part of Ser. No. 150,555, June 7, 1971, abandoned. This application Oct. 8, 1971, Ser. No. 187,810

Int. Cl. B63b *17/00*

U.S. Cl. 9—1 R **9 Claims**



1. A boat windshield structure comprising one or more panes made solely of transparent material, said pane having a rigid and endless plastic one-piece U-shaped frame directly molded on the entire periphery thereof, and means mounted within the confines of said frame for connecting the U-shaped frame of one pane to the boat structure or to the frame of another pane.

3,843,983

ARRANGEMENT RELATED TO INFLATABLE LIFE RAFTS

Walter Tangen, Otto Ruges Vei, Norway, assignor to Gewako S.A., Luxembourg, Luxembourg

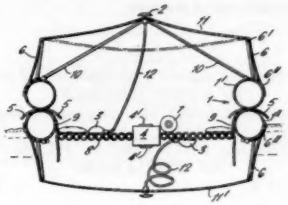
Filed Sept. 7, 1972, Ser. No. 286,942

Claims priority, application Norway, June 28, 1972, 2323/72

Int. Cl. B63b *7/00*

U.S. Cl. 9—2 A **4 Claims**

1. An inflatable life raft arrangement comprising, a circular-shaped floating body of elastic material capable of being inflated from a source of compressed air, a floor of elastic material extending within the inner opening of said circular body, first and second canopies secured along opposite sides of said floating body, elongated rigid elements fixedly attached to the outer wall of said body at said opposite sides thereof beneath said canopies, each of said elements being attached at one end thereof outboard of the vertical centerline of said body, whereby said elements and said canopies collapse inwardly of said body upon deflation thereof, and whereby said canopies are erected on both said sides of said body upon inflation thereof as each of said rigid elements are moved from the inwardly collapsed position to a position slanting slightly inwardly of said body from said vertical centerline.



3,843,984

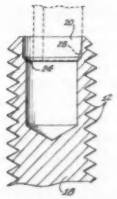
ALL METAL SELF-LOCKING SCREW FASTENER

Mansour A. H. Bagheri, Downey, and Donald W. Stillman, Playa Del Rey, both of Calif., assignors to Long Lok Fasteners Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 8,454, Feb. 4, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,742

Int. Cl. B23g *9/00*

U.S. Cl. 10—10 R **17 Claims**



1. A method of fabricating a fastener having an external screw thread for engagement with a complementary internal screw thread of a complementary fastener, characterized by the steps of:

forming the fastener with the external screw thread;

forming a longitudinal axial bore of circular cross-sectional configuration in the leading end of the fastener with an axially outward portion of the bore increased in diameter and with the radial dimension of the circumferential wall of the bore thickened at the axially inward portion of the bore;

expanding at least one minor circumferential portion of the thickened wall of the fastener radially outward to form a recess or recesses in the thickened wall of the fastener to provide the reduced portion of the bore with a non-circular cross-sectional configuration and to form the fastener with a corresponding radially outwardly protruding lobe or lobes and to cause the pitch diameter of the

external screw thread to be locally increased to conform to the lobe or lobes; and

enlarging the bore of the fastener to thin the circumferential wall,

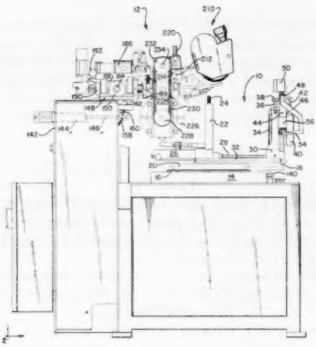
whereby the local increase in the pitch diameter of the external screw thread causes interference fit of the external screw thread with said complementary internal screw thread, the interference fit causing inward resilient displacing of the lobe or lobes by virtue of the thinned circumferential wall of the bore.

3,843,985

MACHINE FOR ROUGHING THE MARGIN OF AN UPPER OF A SHOE ASSEMBLY

Horst M. Leonhardt, Boston, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Aug. 30, 1973, Ser. No. 392,850
Int. Cl. A43d *95/00*
U.S. Cl. 12—1 R **31 Claims**



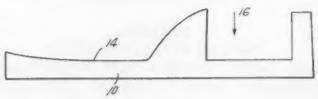
1. A machine for roughing the margin of an upper of a shoe assembly, said shoe assembly comprising a last having an insole located on its bottom and the upper mounted thereon with the upper margin lying against and being secured to the periphery of the insole, comprising: a shoe assembly support for supporting the shoe assembly bottom-up; a frame located rearwardly of the shoe assembly support; a slide mounted to the frame for forward-rearward movement; a first motor connected to the slide for effecting said forward-rearward movement; a yoke mounted to the slide for heightwise movement; a second, yieldable, motor connected to the yoke for effecting its heightwise movement; a shaft mounted to the yoke for rotation about a forward-rearward axis and extending forwardly of the yoke; a tine mounted to the front of the shaft; a housing mounted to the shaft for swinging movement about the shaft axis; a third motor connected to the housing for effecting its swinging movement; a tool mount mounted to the housing for swinging movement therewith; a roughing tool mounted to the tool mount for heightwise movement and located proximate to said tine; a fourth, yieldable, motor connected to said roughing tool for effecting its heightwise movement with respect to the tool mount; a bar mounted to the shaft for forward-rearward movement; a sensing finger mounted to the front of the bar and located below the tine; operating means actuable to yieldably urge the bar forwardly of a median position with respect to the shaft; a first control so interconnecting the bar and the first motor as to cause the first motor to move the slide forwardly when the bar is forward of said median position and to move the slide rearwardly when the bar is rearward of said median position; a second control so interconnecting the shaft and the third motor as to be operative in response to the rotation of the shaft about its axis with respect to the yoke a particular amount in a particular direction to cause the third motor to swing the housing about the axis of the shaft a corresponding amount in said particular direction; means for initially causing the first motor to maintain the slide in a rearward position; means for initially causing the second motor to maintain the yoke in an upper position; means for initially causing the fourth motor to maintain the roughing tool in an upper position with respect to said tool mount; means for initially deactuating said operating means; means for thereafter actuating said operating means and for causing the second motor to lower the yoke to thereby move the sensing finger into engagement with the side of the shoe assembly and to thereby bring the tine into engagement with a portion of the upper margin; and means for thereafter causing the fourth motor to lower the roughing tool with respect to said tool mount into engagement with said portion of the upper margin and for so moving the shoe assembly support with respect to the roughing tool as to move other portions of the upper margin past the roughing tool.

3,843,986

SOLE PRESSURE MEMBERS

Ferdinand Frank Chambers, and Peter Hugh Vernon Dawson, both of Leicester, England, assignors to USM Corporation, Boston, Mass.

Filed Sept. 10, 1973, Ser. No. 396,124
Int. Cl. A43d *00/00*
U.S. Cl. 12—146 R **2 Claims**



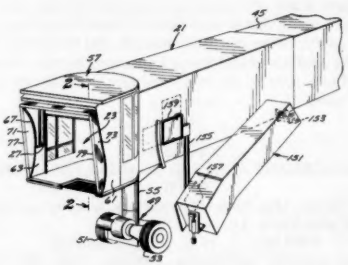
1. A method of making a unitary shoe pressure member, comprising the steps of: procuring a molding frame defining a cavity and a block having an outer surface corresponding to the cavity; separating the block into longitudinal halves; shaping a card into a template conformable to a selected shoe bottom member; shaping each block half conformably to the template; placing the shaped block halves in the mold cavity; and molding the pressure member conformably to the shaped block halves in the mold cavity.

3,843,987

CONTOUR ADAPTED PASSENGER LOADING RAMP

Carl L. Lodjic, Long Beach, Calif., assignor to Global Erectors, Inc., Long Beach, Calif.

Filed Mar. 28, 1973, Ser. No. 345,761
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **7 Claims**



1. Contour adapted passenger loading ramp apparatus for accommodating the contour of a plurality of different aircraft and comprising:

a covered ramp formed with a walk-way terminating at one end in a plane-mating access opening;

canopy means carried from said walk-way and including a roof having a leading and trailing edge, said roof being shiftable toward and away from said aircraft;

an elongated contour adaptor plate disposed over one extremity of said roof and pivotally connected to one extremity to the intermediate portion of said roof, the free extremity of said adaptor plate being shiftable toward and away from said aircraft relative to said leading edge; and

a tangential adjustment plate overlying the free extremity of said adjustment plate and having one end pivotally connected to the leading edge of said adaptor plate whereby said access opening may be mated with the entry doors of different selected ones of said aircraft and said canopy roof shifted toward said aircraft and the free end of said adaptor plate shifted further toward said aircraft while the free end of said adjustment plate is pivoted outwardly to maintain said canopy covered.

3,843,988
METHOD FOR EXCAVATING AN UNDERPASS BENEATH AN EXISTING ROADWAY

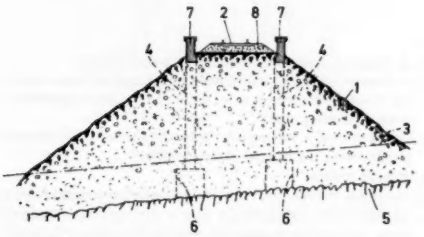
Enrico Hirsch, Neuchatel, Switzerland, assignor to Hermann Hess, Neuchatel, Switzerland, a part interest

Filed July 14, 1972, Ser. No. 272,031

Claims priority, application Switzerland, July 19, 1971, 10608/71

Int. Cl. E01d *19/02*

U.S. Cl. 14—77 **7 Claims**



1. A procedure for constructing an underpass crossing a roadway running on the ground, said underpass extending underneath said roadway, comprising:

constructing a plurality of pillars into the ground, on both sides of said roadway, the distance between two end pillars located on the same side of said roadway being at least equal to the desired width of said underpass,

constructing springers parallel to the upper roadway and resting on the upper end of said pillars, said springers being outwardly of a predetermined traffic gauge necessary for said upper roadway,

placing a superstructure on said springers, said superstructure comprising transverse beams arranged side by side and having their ends resting on the springers, then completing the roadway portion on said superstructure, said superstructure emplacement and roadway portion completion being carried out step by step,

proceeding with a main excavation under said springers and said superstructure,

proceeding with the lateral excavations, said lateral excavations being carried out step by step with progressively strengthening the side faces of the underpass from the level of said springers down to the level of a lower platform of said underpass, and

completing said lower platform.

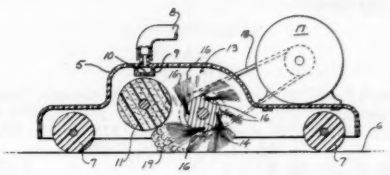
3,843,989
SHAMPOOER WITH ROTARY FOAM GENERATING MEANS

Donald R. DeMaagd, Grandville, Mich., assignor to Bissell Inc., Grand Rapids, Mich.

Filed Feb. 9, 1973, Ser. No. 331,044

Int. Cl. A47l *11/03*

U.S. Cl. 15—50 C **6 Claims**



1. In a device for applying liquid shampoo in the form of foam to a nap surface, the combination comprising:

a. a liquid distributor,

b. means to supply liquid shampoo to said distributor,

c. a freely rotatable cellular compressible member disposed below said distributor for receiving liquid from said distributor,

d. rotatable brush means disposed adjacent said member and with said brush means having bristles compressibly overlapping the peripheral portion of said freely rotatable member,

e. and means to rotatably drive said brush means to thereby rotate and knead the peripheral portion of said freely rotatable member to create foam from said shampoo liquid.

3,843,990
CYLINDRICAL HAIR BRUSH

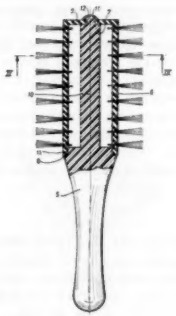
Robert A. Lardenois, 15 Villa du Roule, Neuilly (Hauts de Seine), France

Filed Jan. 10, 1973, Ser. No. 322,467

Claims priority, application France, Oct. 13, 1972, 72.36265

Int. Cl. A46b *3/20*

U.S. Cl. 15—159 R **8 Claims**



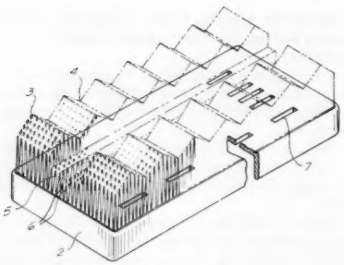
1. Brush for caring for, treating and setting the hair, comprising: a prehension handle, a rigid central shaft extending from said prehension handle and having a free end portion, a cylindrical sleeve made of supple and elastically deformable material, said sleeve having spaced marginal end portions and being adapted to fit on said handle along the axis of said shaft,

said cylindrical sleeve having a diameter greater than the diameter of said central shaft and forming a free annular space between said sleeve and said central shaft to permit movement of said sleeve, means for connecting one of said marginal ends of said sleeve to said free end portion of said shaft, means provided on said prehension handle for holding the other of said marginal ends of said sleeve, and a plurality of bristles or tufts of bristles radially implanted in said sleeve, said bristles or tufts of bristles including bases which pass through the walls of said sleeve.

3,843,991
NAIL BRUSH

Joseph Vallis, 353 Cortleigh Blvd., Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 162,343, July 14, 1971, Pat. No. 3,744,078. This application May 9, 1973, Ser. No. 358,801
Int. Cl. A46b *15/00, 9/00*
U.S. Cl. 15—167 R **7 Claims**

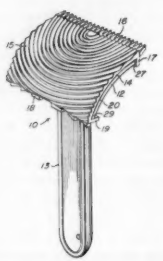


1. A nail brush, comprising a backing member having a surface, a longitudinal and a transverse direction; and a plurality of slender bristles of different lengths projecting from said surface and having free tips which together define a cleaning face having a plurality of transversely extending depressions, a central longitudinally extending depression having a bottom wall, and a central longitudinally extending recess in said bottom wall.

3,843,992
WOOD GRAINING TOOL

Garth Q. Briggs, Springfield, Ohio, assignor to The Murray-Black Co., Inc., Springfield, Ohio

Filed May 7, 1973, Ser. No. 357,688
Int. Cl. B44d *3/28*
U.S. Cl. 15—210.5 **5 Claims**

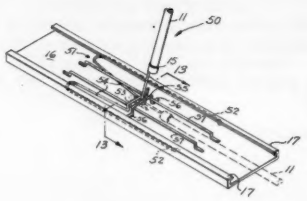


1. A wood graining tool, comprising:
a. body means having a generally arcuate surface thereon,
b. handle means attached to said body means,
c. graining surface means including a cover layer of flexible material having graining projections thereon, and
d. means removably attaching said graining surface means to said arcuate surface for ready interchange, cleaning, and replacement thereof, said attaching means including outwardly directed, spaced tab means on each of the opposite edges of said arcuate surface and notches on opposite ends of said graining surface means, said tab means receiving said notches thereover and engaging therewithin to hold said graining surface means against said arcuate surface on said graining tool.

3,843,993
FLOOR MOP HAVING PIVOTABLE HANDLE FOR CHANGING DIRECTIONS

Ragnvald G. Leland, P.O. Box 4174, Palm Springs, Calif. 92262

Filed July 28, 1972, Ser. No. 275,928
Int. Cl. A47l *13/46, 13/255;* **B25g** *3/38*
U.S. Cl. 15—231 **6 Claims**



1. A cleaning device comprising in combination:
a. a substantially flat, substantially rectangular plate member wherein the longer sides are upturned for engagement with a cleaning pad;
b. bracket means having an upstanding inverted U-shaped portion secured to said plate member;
c. handle means;
d. mounting means secured to said handle means and having an upturned, substantially planar end portion removed from the portion engageable with said handle and readily engageable with and disengageable from said U-shaped portion of said bracket for hookingly mounting said handle means to said bracket; and
e. spring means engaging both said upturned sides of the plate member and said upturned end of the mounting means for retaining said cleaning pad in place and for preventing said upturned end from becoming disengaged from said U-shaped portion of said bracket.

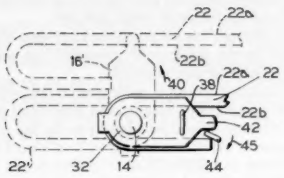
3,843,994
WINDSCREEN WIPERS

Philip G. K. Smithers, Hounslow, England, assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Feb. 6, 1973, Ser. No. 330,040
Claims priority, application Great Britain, Feb. 9, 1972, 6093/72
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **9 Claims**

1. A connector for coupling a windshield wiper superstructure to a wiper arm, the wiper arm having an arm extension with a planar surface comprising an end portion, a section of said end portion being bent away from the planar surface, the connector comprising a pair of side walls secured together in parallel spaced apart relationship, means for attaching the connector to the superstructure for pivotal movement relative to the superstructure about an axis transverse to the superstructure, a first surface extending between said pair of side

walls positioned to engage one side of said bent section of said end portion, a second surface extending between said pair of side walls positioned to engage the other side of said bent section of said end portion and releasable detent means engagable with said planar portion when the arm is in coupled position whereby relative movement between said arm and said connector is restrained and movement of the blade and connector is limited to angular movement about said axis transverse to the superstructure in coupled position.

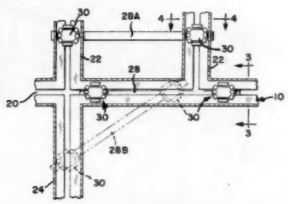


3,843,995

TROLLEY FOR MOVABLE WALL PANELS

Bennett W. Merrill, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 390,115
Int. Cl. A47h *15/00*
U.S. Cl. 16—97 **6 Claims**



1. A trolley for supporting a wall panel for movement along a system of tracks in which track sections are formed with parallel, spaced trolley-wheel supporting flanges defining a slot and spaced track walls and in which tracks are formed with intersections, comprising a trolley body, a pair of wheels mounted on for rotation on said body on a common axis and adapted to run on said track flanges, a panel-supporting pendant bolt, means supporting said bolt substantially on the axis of said wheels while restraining said bolt against relative fore and aft movement and rotational movement with respect to said body, said trolley body having portions which extend forwardly and rearwardly of said axle, a plurality of rolling balls carried on each of said portions having their lower portions substantially in a common plane including the rolling contact line of said wheels, the fore and aft spacing of said balls being less than the width of the track walls to provide for sideways movement of the trolley on said balls along an intersecting track, and spacing of said balls from said wheels being greater than the width of the track slots at an intersection providing rolling support for the trolley body when traversing an intersection.

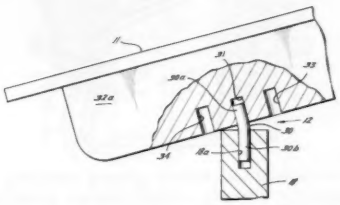
3,843,996

FLEXIBLE HINGE ASSEMBLY

Robert Sobel, 1206 Colquitt, Houston, Tex. 77006

Filed Jan. 4, 1972, Ser. No. 215,313
Int. Cl. E05d *7/00*
U.S. Cl. 16—150 **8 Claims**

1. A flexible hinge assembly comprising:
a. a first frame member;
b. a second frame member;
c. flexible connecting means for pivotally connecting said first and second frame members and yieldably supporting said first frame member in adjustable pivoted positions with respect to said second frame member;
d. said flexible connecting means including a flexible pin having end portions extending into engagement with said first and second frame members;
e. mounting means in said first and second frame members for mounting said flexible pin with said first and second frame members; and
f. said mounting means including slidable mounting means in at least one of said frame members for receiving one of said flexible pin end portions and for permitting sliding movement of said received end portion with respect to said slidable mounting means in response to pivotal movement of said frame members, whereby said flexible connecting means bends and slides as said first and second frame are pivoted with respect to each other and provides support for said first frame member in a pivoted position.



3,843,997

PROCESS FOR OBTAINING CORIUM FROM BOVINE HIDE

Timothy John Mingay Treharne, East Grinstead, and David Henry Tuck, Bromley, both of England, assignors to Viskase Limited, Croydon, England

Filed Mar. 2, 1973, Ser. No. 337,373
Claims priority, application Great Britain, Mar. 6, 1972, 10366/72
Int. Cl. A22b *5/08*
U.S. Cl. 17—47 **17 Claims**

1. A process for obtaining corium from bovine hide, which comprises washing fresh unsalted bovine hide to reduce the hide temperature to 15° C. or below, de-hairing the cooled hide by contacting it with a lime solution having a pH not exceeding 12.6 and a temperature not exceeding 15°C., washing the limed hide, de-fleshing the hide, and obtaining corium from the de-fleshed hide by removing from said de-fleshed hide the epidermal layer together with substantially all hair follicles, thereby leaving corium as residue.

3,843,998

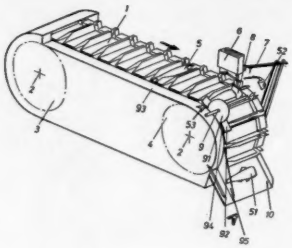
FISH NOBBING MACHINE

Werner Wenzel, Lubeck, Germany, assignor to Nordischer Maschinenbau Rud., Baader, Lubeck, Germany

Filed May 15, 1972, Ser. No. 252,980
Int. Cl. A22c *25/14*
U.S. Cl. 17—60 **7 Claims**

1. A fish nobbing machine, comprising a machine frame, two end wheels journalled in said frame, an endless conveyor guided around said end wheels for downward movement, driving means driving one of said end wheels, a plurality of U-shaped fish receiving troughs carried by said conveyor and having longitudinal axes extending transversely to the path of movement, said troughs being divided into a body receiving

trough and a head receiving trough with a slot therebetween, a head cutter located above that end wheel about which said troughs move downwardly, said head cutter having two cooperating shearing knives with cutting edges and recesses intersecting said edges, a drive shaft for said knives, and a drive connection between said driving means and said drive shaft, adjustment means for said head cutter having an intermediate

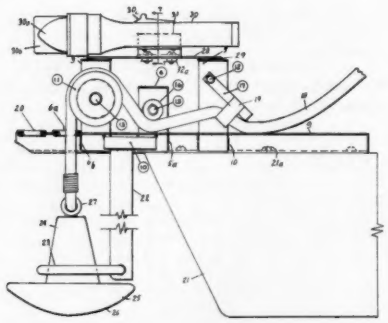


wheel located in said drive connection, a spring shifting said intermediate wheel, a feeler sensing the size of fish upon a trough and actuating said spring, said adjustment means changing the centers of said recesses at the moment of closing for processing differently sized fish, and a head-intestine extractor cooperating with said head cutter and having a fork with a plurality of tines.

3,843,999
ANCHOR CADDY

John N. Kramoski, 925 Mason Ave., Aurora, Ill. 60538

Continuation-in-part of Ser. No. 22,100, March 13, 1970, abandoned. This application Dec. 16, 1971, Ser. No. 208,976
Int. Cl. F16g *11/04*
U.S. Cl. 24—134 KC **3 Claims**

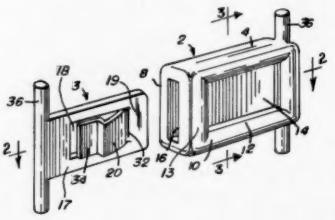


1. An anchor rope clamping mechanism comprising,
an elongated frame having a downwardly opening longitudinal channel centrally thereof,
a U-shaped bracket having downwardly extended legs secured to the vertical sides of said channel in the forward portion of the frame,
a pulley mounted between said legs for guiding on its upper peripheral portion an anchor supporting rope,
a second U-shaped bracket having downwardly extended legs secured to the vertical sides of said channel in the rear portion of the frame,
a clamping bar pivotally mounted near its upper end between the legs of said second bracket to swing downwardly toward said frame,
means on the frame against which the lower end of the bar may pinch and clamp the rope,
said bar having a non-abrading lower edge portion engagable with the rope when in clamping position,
rope guide means secured to the forward face of the bar and near its lower end and positioned to guide the rope downwardly and rearwardly under the bar,
a third U-shaped bracket positioned between the pulley and the bar having downwardly extended legs secured to the vertical sides of said channel,
and an intermediate rope guide positioned within and supported on said third bracket and positioned to receive on its under side an anchor rope from the top of said pulley and guide it therefrom to a lower level closer to the frame and thence to a higher level at which it bends downwardly to enter the first aforesaid rope guide means.

3,844,000
CLASP

Jon Hedu, Watertown, Conn., assignor to The Siemon Company, Watertown, Conn.

Continuation-in-part of Ser. No. 312,218, Sept. 27, 1963, Pat. No. 3,251,110, which is a continuation-in-part of Ser. No. 226,828, Sept. 28, 1962, Pat. No. 3,196,878. This application May 13, 1966, Ser. No. 550,004
Int. Cl. A44b *17/00*
U.S. Cl. 24—230 SC **8 Claims**



1. A fastener device comprising:
a pair of separable members, one of said separable members having an elongate base plate, said base plate having wall portions projecting in a generally common direction from adjacent at least an end portion and opposed side portions and bar-like structure extending between the opposed side wall portions in spaced relationship to the end wall portion to define a housing having a fenestration therein with that end portion of the housing which is opposed to the end wall portion thereof being substantially open and unobstructed, the other of said separable members comprising an elongate frame member having opposed side and end portions and a fenestration therein together with a resiliently disposed substantially solid tongue member having a thickness substantially the same as the thickness of the frame member projecting from one end portion of the frame member into the fenestration whereat the tongue member terminates in a free end portion, said tongue member defining an inclined surface extending from flush with the frame member to a location outside the fenestration whereat the surface terminates to define a shoulder facing the free end portion and closer to the free end portion than to the one end portion forming a notch having a depth not greater than the thickness of the bar-like structure extending along said tongue member from said shoulder to said free end portion, the frame member being receivable within the housing by projecting the one end portion of the frame member through the open and unobstructed end portion of the housing with the shoulder and free end portion of the tongue member into the fenestration of the housing and

into engagement with said bar-like structure to substantially securely position said tongue within said housing to preclude the advent of protuberances by relative movement between said tongue and said housing, and maintain a flush relationship therebetween and with the side portions and the one end portion of the frame member being in engagement with the side and end wall portions of the housing, said frame member and the tongue portion thereof being disposed in a plane substantially common to the plane of the housing and within the confines thereof when the frame member is attached thereto, and means for attaching said separable members to separable and adjoining areas.

3,844,001

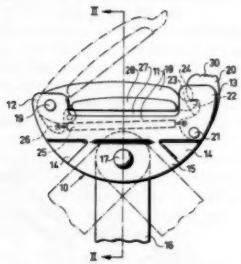
LOCK FOR A THREE-POINT SAFETY BELT FOR MOTOR VEHICLES

Gote Eskil Yngve Holmberg, Posfiada 2010, 33020 Anderstorp, Sweden

Continuation-in-part of Ser. No. 800,968, Feb. 20, 1969, abandoned, and a continuation of Ser. No. 121,642, March 8, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 386,147

Int. Cl. A44b *13/02*; **A47c** *31/00*

U.S. Cl. 24—233 **1 Claim**



1. A lock for anchoring a safety belt extending between two points on a wall of a body structure at a loop position of the belt intermediate the two points to form a shoulder strap and a hip strap, comprising, in combination, a frame adapted to be attached to the body structure and formed with spaced outwardly extending first and second pairs of side walls in a U-shape defining first and second slots therebetween which are in alignment with each other, and an intermediate elongated cavity; a bar pivotally mounted in the first slot for movement into and out from the second slot; a double-armed lever pivotally mounted between the arms thereof in the second slot, which lever extends along said slot and includes a first arm forming a latching member for locking the bar in said second slot in a position to prevent the bar from being released therefrom by an outward pulling movement, and a second arm extending substantially in a direction opposite to that of the first arm to form a counterweight therefor; the bar when it is in the locked position closing off an elongated slot at least as wide and thick as a safety belt for anchoring a safety belt therein in a manner to permit the belt to slip through the slot and when it is released from a locked position releasing the belt; a single tension coil spring biasing means extending within the elongated cavity of the frame between the two pairs of outwardly extending side walls and attached at one end to the bar and at the other end to the latching member to bias the bar to an open position and the latching member to a latching position; and means for affixing the frame to a position on the body structure.

3,844,002

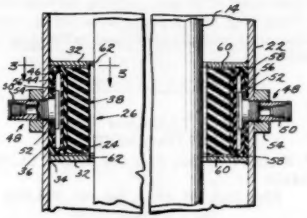
GRIPPER ASSEMBLY FOR JACKING MECHANISMS

Charles O. Slemmons, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Mar. 16, 1973, Ser. No. 342,248

Int. Cl. E04b *1/56*; **F16b** *9/02*

U.S. Cl. 24—263 DH **10 Claims**



1. A pneumatic gripping assembly for installation in an inwardly-facing annular channel, generally rectangular in radial section, of a jacking mechanism releasably engageable with a cylindrical column-like supporting member comprising:

an inflatable toroidal tube, of rubber or the like, of generally uniform wall thickness adapted to be disposed in the bottom of the channel and to conform generally thereto when deflated; and

a toroidal slug assembly, of rubber or the like, comprising a plurality of solid arcuate segments of greater radial dimension than the wall of said tube, adapted to be disposed in the channel inwardly of said tube and to conform generally thereto and to said channel, said assembly having, when assembled with said segments in end-to-end abutting engagement with no gaps therebetween, a cylindrical inner surface of a diameter substantially equal to that of the rim of said channel, said assembly being adapted to be constricted into frictional gripping engagement with a cylindrical column-like supporting member by inflation of said tube.

3,844,003

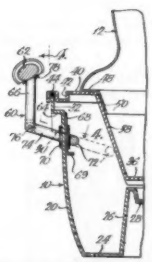
COMBINATION CASKET AND VAULT

Manfred E. Angermann, Glen Ellyn, Ill., assignor to Racine Duo-Guard, Inc., Williams Bays, Wis.

Filed Feb. 7, 1973, Ser. No. 330,209

Int. Cl. A61g *17/04*

U.S. Cl. 27—35 **6 Claims**



1. In a casket structure including

a. a bottom wall,

b. side walls extending upwardly from the bottom wall and including spaced inner and outer members, and

c. a lid supported on the side walls,

d. a retractable handle mounted on each side wall, comprising,

d-1. an elongate hand grip disposed alongside the outer wall member,

d-2. arms extending inwardly from the hand grip through apertures in the outer wall member for movement reciprocally between a retracted storage position with the hand grip adjacent the outer wall member and an extended operative position with the hand grip spaced from the outer wall member, and

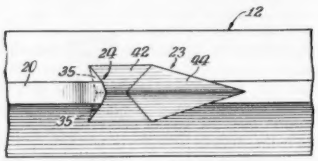
d-3. retention means comprising a crosspiece connecting the inner ends of the arms limiting outward movement of the hand grip, said crosspiece including outwardly extending arms pivotally connected to the inner ends of the handle arms.

3,844,004

FELTING NEEDLE

Edson P. Foster, P.O. Box 527, 409 S. 29th St., Manitowoc, Wis. 54220

Filed Sept. 20, 1973, Ser. No. 398,978
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 N **6 Claims**



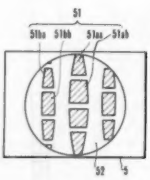
1. A felting needle comprising a body portion having a fiber receiving recess therein, and a spur in said body portion above said recess having a downwardly protruding material engaging surface at its lower end comprising bi-lateral bottom surfaces converging toward each other at an obtuse angle from opposite sides of the body portion.

3,844,005

METHOD OF MANUFACTURING COLOUR SELECTION ELECTRODES FOR USE IN COLOUR PICTURE TUBES

Junichi Yamada, and Etuzo Terashima, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 320,914
Claims priority, application Japan, Jan. 19, 1972, 47-6962
Int. Cl. H01j *9/00*
U.S. Cl. 29—25.17 **5 Claims**



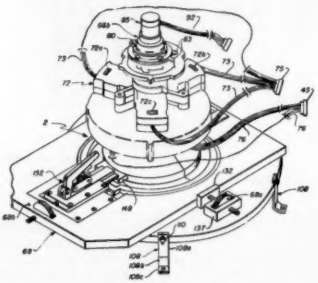
1. A method of manufacturing a colour selection electrode having a plurality of stripe shaped perforations and used in a colour picture tube provided with a fluorescent screen having a plurality of stripe shaped phosphors, said method comprising the steps of preparing a first pattern member formed with a plurality of parallel stripe shaped light transmitting portions extending in a first direction, the width of said light transmitting portions gradually decreasing from the center toward the opposite ends, a second pattern member formed with a plurality of parallel stripe shaped light transmitting portions extending in a second direction which is different from said first direction, and a third pattern member formed with a plurality of parallel light intercepting portions extending in a third direction which is different from said first and second directions; preparing a fourth pattern member formed with a plurality of discontinuous light intercepting portions which are formed by using a combination of said second and third pattern members; combining said first and fourth pattern members for preparing a reference pattern member formed with a plurality of parallel stripe shaped light transmitting portions which are divided into a plurality of slit shaped sections by means of a plurality of staggered light intercepting bridges; and forming said colour selection electrode provided with a plurality of parallel stripe shaped perforations by using said reference pattern member, the width of each stripe shaped perforation gradually decreasing from the center toward the opposite ends, each stripe shaped perforation being divided into a plurality of slit shaped sections by means of transverse bridges, the bridges in adjacent perforations being staggered in the direction thereof.

3,844,006

METHOD OF MAKING AND ADJUSTING DEFLECTION YOKE

Kenneth W. McGlashan, Laredo, Tex., assignor to Pemcor, Inc., Westchester, Ill.

Division of Ser. No. 284,370, Aug. 28, 1972, Pat. No. 3,810,053. This application Feb. 28, 1974, Ser. No. 446,719
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 **15 Claims**



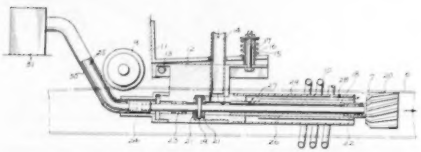
1. A method of manufacturing a deflection yoke assembly with optimized beam deflecting parameters permitting the beams of a color television cathode ray tube to be properly dynamically converged over the face of the cathode ray tube, said method comprising: fabricating the deflection yoke assembly so it includes a frame mountable around the neck of a color television cathode ray tube, the frame supporting vertical and horizontal deflection coils and a core related to said vertical and horizontal deflection coils to form a low reluctance path for the magnetic field outside the neck of the cathode ray tube, one of said core and deflection coils being mounted for fine adjustment with respect to the other of same parallel to at least one of the horizontal and vertical axes of the deflection yoke assembly, mounting the deflection yoke assembly on the neck of a standard test color television cathode ray tube including beam intensity control terminals for controlling the intensity of the electron beams thereof striking the cathode ray tube screen, mounting purity and static convergence apparatus mounted around the neck of said cathode ray tube, making the usual purity and static convergence adjustments with said apparatus and, while applying signals to said cathode ray tube control terminals and to one of said

horizontal and vertical deflection coils of said deflection yoke assembly to produce colored horizontal beam traces to be converged at least at two points spaced on opposite sides of the center point of the screen, adjusting the relative position between the core and at least one of said horizontal and vertical deflection coils to produce the desired convergence of said horizontal beam traces at said points.

3,844,007
WELD BEAD REMOVING APPARATUS

Jiro Kojima, No. 40-24 Honcho 5-chome, Tokyo, Japan

Filed Nov. 8, 1972, Ser. No. 304,637
Claims priority, application Japan, Nov. 11, 1971, 46-89404
Int. Cl. B23c *3/00*
U.S. Cl. 29—33 A **5 Claims**

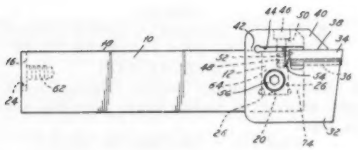


1. Apparatus for continuously removing a weld bead from the inner surface of a welded metallic tube comprising; means for cylindrically forming a metallic strip and butt welding both edges of said metallic strip, a rotary cutter, said rotary cutter being positioned relative to said means for forming and welding said metallic strip so as to be disposed within the formed tube just beyond the location where the edges are welded together for cutting the internal bead on the inner surface of said tube in the vicinity of the welding point of said tube where the temperature of the weld bead is close to the melting point of the metal, a rotary shaft carrying said rotary cutter at one end thereof, driving means adapted to be connected with the opposite end of said rotary shaft and operating to rotate said rotary shaft at high speed, and means for rotatably supporting said rotary shaft and resiliently pressing said rotary cutter against the internal weld bead of said tube.

3,844,008
CUTTING TOOL

Terry L. Sletten, Westland, Mich., assignor to The Valeron Corporation, (Detroit) Oak Park, Michigan

Filed Mar. 14, 1973, Ser. No. 341,095
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **13 Claims**

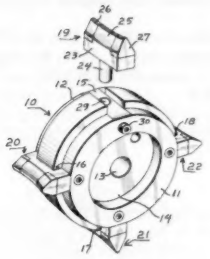


1. A cutting tool comprising:
a tool body,
a cutting insert locating member including an insert supporting surface extending beyond an end of said body, clamp means for clamping an insert in position against said insert supporting surface,
interengaging positioning means on overlapping sides of said insert locating member and said body, said positioning means including a key having a pair of parallel locating walls extending generally normal to said insert supporting surface,
interengaging planar locating and supporting surfaces at the lateral interface between said body and insert locating member, adjacent said positioning means, and
means for securing said insert locating member to said body with said positioning means and planar surfaces in engagement.

3,844,009
CUTTER TOOL

James A. Anania, 801 North 6th St., Newark, N.J. 07107

Filed Dec. 9, 1971, Ser. No. 206,312
Int. Cl. B26d *1/00*
U.S. Cl. 29—97 **3 Claims**

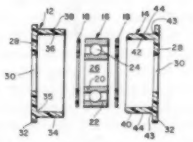


1. A cutter head comprising,
a. a circular body having a plurality of longitudinally-extending slots formed in the peripheral surface,
b. a corresponding number of generally-rectangular blocks, each block carrying a pair of cutting tips and being positioned in one of the slots, wherein each block has a tapered portion and recessed ends, wherein the cutting tips are of generally triangular configuration and brazed to the said recessed ends, and wherein the apexes of the cutting tips and said tapered portion lie on a common circle and present a concave configuration with respect to the said circular body, and
c. cooperating means on the said body and blocks for securing the blocks to the body.

3,844,010
METHOD OF MAKING A BEARING HOUSING ASSEMBLY

Charles C. Frost, Newaygo, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to C. L. Frost and Son, Inc., Grand Rapids, Mich.

Filed Apr. 30, 1973, Ser. No. 355,598
Int. Cl. B23p *11/00;* **B21d** *53/26;* **B23k** *27/00*
U.S. Cl. 29—148.4 A **5 Claims**



1. The method of assembling a bearing housing or the like comprising:
providing a pair of molded thermoplastic housing members,

each member having a flat, planar bottom wall portion and annular outwardly extending side wall portions, said side wall portions having an inner diameter and an outer diameter, said inner diameter of one of said members being slightly larger than the outer diameter of the other of said members;

placing a bearing in the inner diameter of said other of said members;

telescoping the wall portions of said one of said members over the wall portion of the other of said members; and

fusing said one of said members to the other of said members to thereby form an integral housing about said bearing.

3,844,011

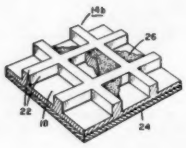
POWDER METAL HONEYCOMB

Gail F. Davies, Mentor, Ohio, assignor to Gould Inc., Chicago, Ill.

Continuation of Ser. No. 100,140, Dec. 21, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,371

Int. Cl. B22f *3/16*

U.S. Cl. 29—182.3 **5 Claims**



1. A grid-like structure of powder metal, comprising:

a coherent and continuous body of porous material of compacted metal powders providing a grid established by mechanical impacting of selective regions thereby forming a network of cavities arranged and distributed in a repeating and predetermined manner uniformly over substantially the entire surface of the grid with said body having a density of 35 to 95 percent of theoretical, and sintered in situ material of compacted metal powders within and substantially filling said cavities and having a density of 20 to 60 percent of theoretical, with the area in said body of the grid below each cavity having a density substantially greater than the density of the wall areas defining said cavity.

3,844,012

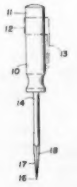
ELECTRONIC HAND TOOL

Rodney L. Sturtevant, 292 Wilmington, Tonawanda, N.Y. 14150

Filed Oct. 5, 1973, Ser. No. 403,943

Int. Cl. B25b *27/02*; **H05k** *13/00*

U.S. Cl. 29—203 H **3 Claims**



1. A hand tool for use in electronic maintenance work which comprises a cylindrical rod fitted to a plastic handle, with the free end of the rod formed in a pointed, curved tip and with a cutting edge leading along both sides of the rod from the tip part towards the handle, said cutting edge formed by two flat beveled surfaces formed at the tip end of the rod with said beveled surfaces intersecting each other to form said cutting edge.

3,844,013

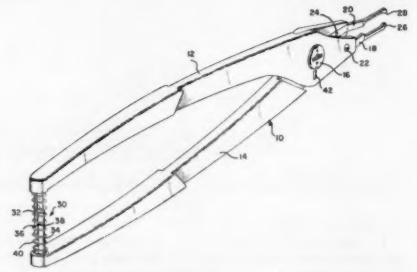
EXTRACTION TOOL

Leslie Carl Hall, Jr., Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 11, 1973, Ser. No. 378,294

Int. Cl. B25b *7/00*, *27/02*

U.S. Cl. 29—203 H **4 Claims**



1. An extraction tool for removing individual electrical contact plugs from a closely spaced array of electrical contact receptacles, in which each said plug have, at least, one transversely extending latching means lying within a longitudinally extending channel which must be depressed into the channel in order to facilitate removal of said plug, said tool comprising:

an elongated pivot handle;

an elongated adjustable handle;

adjustment means pivotally connecting said handles together adjacent one respective end thereof;

work tips detachably fixed to extend from said handles adjacent said one end thereof, each said work tip having a shoulder at the free end thereof directed towards a like shoulder on the other of said work tips; and

limit means at the other end of said handles, said limit means including overlapping members having one end integral with each of said handles and lip means locking engageable with each other, and spring means normally biasing said handles apart bringing said lips of said overlapping members into engagement.

3,844,014

DEVICE FOR HOLDING A SLIDER DURING ASSEMBLAGE OF A FASTENER CHAIN THERETHROUGH

Kihei Takahashi, Uozu, and Shunichi Shigeno, Kurobe, both of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1973, Ser. No. 385,807

Claims priority, application Japan, Aug. 12, 1972, 47-80898

Int. Cl. B23p *19/04*

U.S. Cl. 29—207.5 SL **6 Claims**

1. A device for holding a slider during assemblage of a fastener chain therethrough, wherein said slider includes a pull tab having an opening therein, said device comprising:

a support structure including:

a recessed slider mount formed on the top of said support structure, and

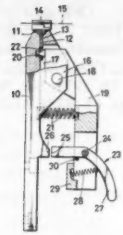
a channel extending downwardly from said recessed slider mount,

said channel being adapted to receive said pull tab of said

slider placed upside down on said recessed slider mount;

a lever supported by said support structure so as to be turnable between a first and a second position;

a detent formed on the upper end of said lever and adapted to engage said opening of said pull tab when said lever is



in said first position;

spring means for yieldably urging said lever to said first position; and

means for normally preventing said lever from turning to said second position where said detent is disengaged from said opening of said pull tab.

3,844,015

SLIDER ASSEMBLY DEVICE

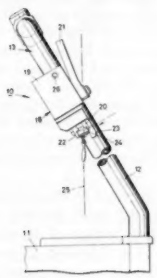
Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1973, Ser. No. 361,131

Claims priority, application Japan, May 22, 1972, 47-60207

Int. Cl. B23p *19/04*

U.S. Cl. 29—207.5 SL **4 Claims**



1. An assembling device for a concealed slide fastener which comprises a support bed, a post extending therefrom, a crank arm carrying a slider holder for holding sliders while assembling the fastener chain therethrough, and means for adjusting the angular position of said slider holder such that the guide channel of the slider when mounted thereon can be seen through from a downwardly tilted angle.

3,844,016

SLIDER HOLDER FOR SLIDE FASTENERS

Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1973, Ser. No. 385,808

Claims priority, application Japan, Aug. 8, 1972, 47-79332

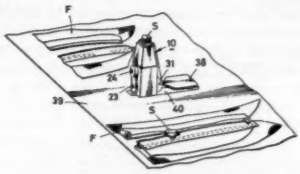
Int. Cl. B23p *19/04*

U.S. Cl. 29—207.5 SL **2 Claims**

1. A slider holder for releasably holding sliders while assembling a slide fastener chain therethrough, which slider holder comprises:

a vertically elongated support structure having an opening therein;

a slider holding means movable within said opening between a first and a second position,



said first position defining the mounting of a slider on said slider holding means; and

a slider supplying means movable into and away from said opening and supplying sliders to said slider holding means at said second position.

3,844,017

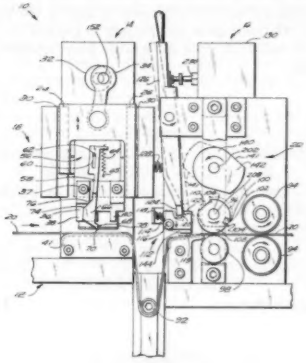
APPARATUS FOR GAPPING ZIPPER CHAIN

Harry Fisher, and Stuart Fisher, both of Whitestone, N.Y., assignors to Stagg Zipper Corp., Brooklyn, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,485

Int. Cl. B23p *19/04*

U.S. Cl. 29—207.5 D **46 Claims**



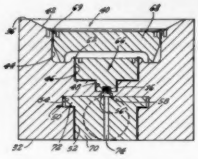
1. A device for forming gaps at predetermined locations in a continuous web having a plurality of ridges or the like extending transversely or the web, said device comprising, a frame, a chopping element mounted in said frame for reciprocal vertical movement therein, a support platform mounted in said frame below and in generally vertical alignment with said chopping element for supporting a web passing through said device in vertical alignment with said chopping element, and registration means mounted for vertical movement with said chopping element for engaging at least one ridge on said web to precisely locate said web prior to contact therewith by said chopping element, whereby, on the downward stroke of said chopping element said registration means positions said web with respect to said chopping element and said element removes a predetermined array of ridge sections from said web.

3,844,018

CONTAINER INSPECTION SYSTEM AND METHOD

Fredrick L. Calhoun, Torrance, Calif., assignor to Industrial Dynamics Company, Ltd., Torrance, Calif.

Division of Ser. No. 121,321, March 5, 1971. This application June 19, 1972, Ser. No. 264,388
Int. Cl. B23q 17/00
U.S. Cl. 29—407 12 Claims



1. A method of constructing apparatus for providing an emission of radiation, including the following steps:

providing standard bar stock of a metal including means forming end walls and having any impurities extending longitudinally in the direction of rolling at an intermediate position between the end walls of the bar stock and in a plane generally parallel to the end walls and the direction of rolling,

forming from the bar stock a pair of housings in such a manner that one wall of each housing is defined by that portion of the bar stock at the intermediate position between the said end walls of the bar stock,

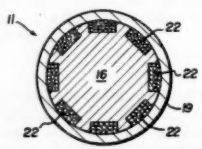
forming cavities in each housing to define a thin window therein, one of said cavities being formed in the said one end wall and the other being formed in the opposite end thereof forming the said end wall of said bar stock, and disposing a source of radiation in one of the cavities in sealed relationship to the housing to provide for the passage of radiation from the source only through the thin window.

3,844,019

SAW AND IMPACT RESISTANT SECURITY BAR AND METHOD OF MAKING SAME

Warren M. Shwayder, Bloomfield Hills, and Baruch Sfar, Oak Park, both of Mich., assignors to Warren M. Shwayder, Bloomfield, Mich., a part interest

Division of Ser. No. 260,397, June 7, 1972, Pat. No. 3,777,517. This application July 12, 1973, Ser. No. 369,400
Int. Cl. B22f 3/24
U.S. Cl. 29—420.5 12 Claims



1. A saw and impact resistant member comprising:

an elongated metal core having a closely fitted, thin wall metal sheath surrounding and in face to face contact therewith;

longitudinally extending core spaces, of shallow depth, formed between the surface of the core and the interior surface of the sheath, with said core spaces being filled with a matrix formed of closely packed hard particles, such as of metallic carbides and the like and a softer binder material;

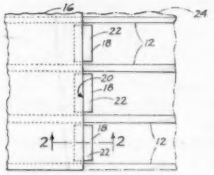
said sheath being closely fitted on said core to exclude both said binder and said hard particles therebetween except in said core spaces.

3,844,020

CONSTRUCTION METHOD

Haldon L. Hamilton, Crescent City, Calif., assignor to Hambro Forest Products, Inc., Crescent City, Calif.

Filed Aug. 23, 1972, Ser. No. 283,050
Int. Cl. B23p 11/00
U.S. Cl. 29—432 11 Claims



1. A method of constructing a sheet-faced reinforced assembly comprising

providing a support structure comprising a plurality of elongate laterally spaced support members defining a common plane, adjacent support members being spaced from each other by a void between the members,

securing a first panel to the support structure with said panel paralleling the plane defined by the structure and with the back side of the panel adjoining the structure, at least a portion of a margin of said panel adjacent an edge of the panel and on the back side of the panel facing a void between adjacent support members,

from the front side of said first panel fastening a seam strip to the back side of the panel along said portion of said margin with the seam strip fitting in said void, said seam strip being positioned as fastened with a portion of the strip projecting beyond said edge of said panel whereby said portion of the strip is exposed from the front side of said panel,

securing a second panel to the support structure with an edge of the second panel abutting said edge of the first panel and with a portion of the margin of said second panel on the back side and adjacent said edge of the second panel overlying the projecting portion of said strip, and

from the front side of the second panel fastening said second panel to the seam strip through its said margin.

3,844,021

METHOD OF SIMULTANEOUSLY DRAWING A PLURALITY OF WIRES AND APPARATUS THEREFOR

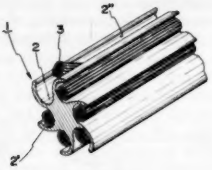
Koichi Hamada, Tokyo, Japan, assignor to Nippon Seisen Co., Ltd., Osaka, Japan

Filed July 16, 1973, Ser. No. 379,658
Claims priority, application Japan, July 17, 1972, 47-71446
Int. Cl. B23p 17/04
U.S. Cl. 29—419 R 10 Claims

1. A method of simultaneously drawing a plurality of wires comprising the steps of:

a. providing a long carrier having a plurality of troughs formed in the peripheral surface thereof;

b. containing a plurality of bundled material wires in the troughs;



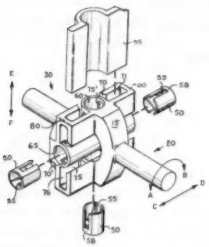
c. closing the troughs to form a bound body;
d. drawing the bound body, and
e. then separating the long carrier from the wires.

3,844,022

METHOD OF MAKING A UNIVERSAL FLEXURAL ASSEMBLY

Richard A. Kutash, Yorkville, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 5, 1972, Ser. No. 286,368
Int. Cl. B23p *11/00*
U.S. Cl. 29—436 **4 Claims**



1. A method of making a universal flexural assembly comprising:
forming an integral body having a central portion and two substantially axially extending yoke portions, said central portion having first and second generally U-shaped chambers orthogonally and inversely disposed relative each other, said central portion having first and second generally cylindrical bores orthogonally disposed such that they intersect at their respective centers, said central and yoke members held together by a plurality of support arms;
providing a plurality of resilient coupling members within said first and second cylindrical chambers; and
removing said support arms such that universal relative movement of said first and second yoke portions occurs in response to a force on one of said yoke portions.

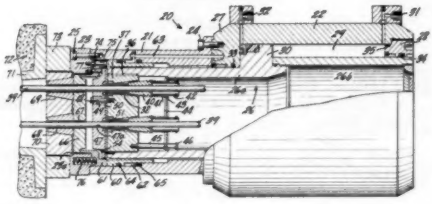
3,844,023

APPARATUS AND METHODS FOR TENSIONING CABLES

Jorge Juan Ventura Surribas, Calle San Andres, 240, and Juan Coll Morell, Calle Amilcar, 209, both of Barcelona, Spain

Filed Sept. 12, 1972, Ser. No. 288,415
Claims priority, application Spain, Sept. 14, 1971, 172706
Int. Cl. E21b *19/00*
U.S. Cl. 29—452 **18 Claims**

1. A jack for simultaneously tensioning a plurality of cables each projecting through a wedge-shaped bore in an anchor assembly and for anchoring the cables to a structure after tensioning by seating anchor wedges in the corresponding wedge-shaped bores, comprising:
a jack body having a front end for operatively abutting the structure during tensioning, and further having a longitudinal passage therein opening at the front end into a mouth for receiving the cables;
a tensioning head disposed within the jack body passage for one-to-one gripping of each cable, said tensioning head including (1) gripping means for gripping each cable, (2) unclamping means adapted for longitudinal movement relative to the gripping means from a disengaged position at which the unclamping means is inoperative to release the gripping means to an engaged position at which the unclamping means is operative to release the griping means, and (3) resilient means normally urging the unclamping means to the disengaged position;
a plate having a plurality of bores arranged in a pattern corresponding to that of the gripping means, the plate



being adapted to be threaded onto the cables independently of the jack body and positioning closely adjacent the free ends of the cables to align the cables ends in the pattern of the gripping means so that the cable ends are held by the plate in proper alignment for receipt by the gripping means upon insertion of the jack body over the cables;
means for urging the tensioning head to a position adjacent the mouth of the jack body, so as to bring the plate and the tensioning head adjacent each other and to allow substantially simultaneous receipt of the cable ends by the gripping means upon insertion of the jack body over the cables, and for urging the tensioning head away from the housing to simultaneously tension the cables; and
means for engaging the plate to drive the anchor wedges into their corresponding wedge-shaped bores, whereby the cables are anchored to the structure in their tensioned state.

3,844,024

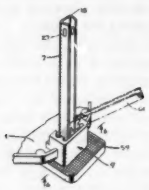
METHOD OF MOUNTING COMPONENTS OF A DYNAMOELECTRIC MACHINE

Charles W. Otto, De Kalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 246,219, April 21, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,693
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.3 **20 Claims**

1. A method of mounting a structural component of a dynamoelectric machine to a stationary member thereof comprising the steps of:
a. mounting a set of beams to the stationary member;
b. positioning end portions of the beams within receiving means provided therefor in the structural component;
c. introducing molten metal into the receiving means for

mounting engagement between the beam end portions and at least a portion of the receiving means; and



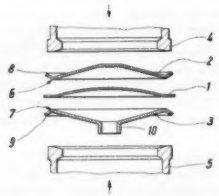
d. solidifying the metal thereby forming means for holding the beam end portions and the receiving means portions in mounting engagement.

3,844,025

METHOD OF MAKING A PRESSURE ACTUATED CONTROL DEVICE

Josef Lingnau, Bremen-Borgfeld, Germany, assignor to Gestra-KSB Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft, Bremen, Germany

Filed Aug. 15, 1973, Ser. No. 388,681
Claims priority, application Germany, Aug. 23, 1972, 2241336
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—482 **3 Claims**



1. A method for making a pressure actuated control device having a diaphragm located between two housing members which comprises:

performing two thin walled housing members with obliquely flared peripheral clamping flanges of substantial width diverging outwardly from normal clamping position the flanges having clamping areas disposed along their inner edges;

assembling said housing members in register with one another on opposite sides of a flexible diaphragm;

clamping said assembly together with external clamping means under sufficient external clamping force to elastically deform said flanges and bring their full clamping areas into firm contact with said diaphragm; and

welding the peripheral edges of said clamped assembly while said flanges remain elastically deformed.

3,844,026

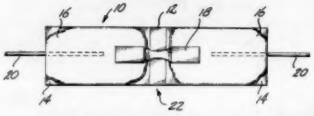
BOND PREPARATION IN ELECTRICAL DEFLECTION-SENSITIVE TRANSDUCER

Thomas B. Hutchins, IV, 310 N.W. Brynwood Ln., Portland, Oreg. 97229

Filed June 14, 1973, Ser. No. 369,784
Int. Cl. B23k *1/12*
U.S. Cl. 29—487 **23 Claims**

1. A method of preparing in an electrical deflectionsensitive transducer an electrically conductive, dimensionally stable, substantially nondistorting force-transmitting bond between a piezoresistive element and a carrier therefor used in the transducer, said method comprising

flowing into intimate contact with the element and carrier a liquid mass of an alloy consisting of gold and tin and comprising, by weight, about **80%** gold and about **20%** tin,



solidifying the flowed mass to form a deposit of said alloy joined to and joining the element and carrier,

without reliquefying the deposit, alternately, and a plurality of times, heating and chilling it, and

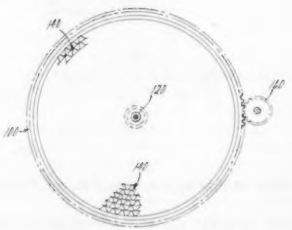
by said heating and chilling relieving stresses in the deposit.

3,844,027

COPPER BRAZING OF MATRIX STRUCTURES

Frederick A. Hagen, Birmingham, and Royal E. Davis, Farmington, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed June 25, 1973, Ser. No. 373,075
Int. Cl. B21d *53/02*
U.S. Cl. 29—488 **14 Claims**



1. A method of uniformly applying copper brazing material to matrix assemblies for the subsequent copper brazing thereof, comprising the steps:

A. preparing a slurry of copper brazing paste to form a brazing material,

B. placing the slurry on one face of the matrix assembly so as to introduce it to the passageways thereof, and

C. establishing a pressure differential between the faces of the matrix assembly whereby the slurry is caused to flow through the passageways and coat the interior thereof.

3,844,028

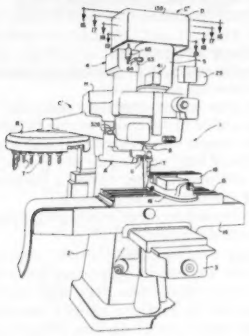
AUTOMATIC TOOL CHANGER

Robert Z. Hague, Oradell, N.J.; Edwin F. Hantman, New York, N.Y.; Howard H. Laucks, South Hackensack; George J. Loos, Parsippany, both of N.J.; Matthew F. Marsicano, Forest Hills, N.Y., and Alfred J. Mastropole, Saddle River, N.J., assignors to Moog Inc., East Aurora, N.Y.

Filed May 2, 1969, Ser. No. 821,361
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **70 Claims**

1. In a machine tool having a spindle, the improvement which comprises a tool rack having a plurality of tool stations for storing a plurality of working tools severally adapted for driven connection to said spindle, means mounting said rack

for rotation about a fixed axis generally parallel to that of said spindle and radially spaced therefrom, a transfer arm pivotable about an axis radially spaced from but generally parallel to the rack and spindle axes between a first angular position adjacent said rack and a second angular position adjacent said spindle, means mounting said arm for such pivotal movement only between said angular positions as limits without stopping in moving from one to the other of said angular positions, means mounting said arm for translation axially of said axes only between a first axial position axially adjacent said rack and spindle and a second axial position axially remote from said rack and spindle as limits without stopping in moving from one to the other of said axial positions, and a working tool grasper arranged on said arm for extension and retraction relative thereto and arranged to exert a prehensile grip only when said arm is in said second axial position but not when in



said first axial position, said arm when carrying a working tool carrying only a single working tool and removing a working tool from said spindle and returning it to said rack before said rack is rotated to present another working tool to said arm for pickup thereby and transfer to said spindle, said rack including a plate having an opening at each of said tool stations, an annular socket member secured at one end to said plate and surrounding each such opening to provide a socket for a working tool, an index key on the inside of said socket member arranged to be received in an index keyway in a working tool when inserted in said socket, and latch means arranged adjacent said socket member for releasably supporting a working tool therein and including a transverse pivot pin mounted on said socket member at the other end thereof, a hook-shaped latch pivotally supported on said pin and spring means operatively arranged between said plate and latch, said plate having an opening through which said latch extends.

3,844,029

HIGH POWER DOUBLE-SLUG DIODE PACKAGE

Raymond Dibugnara, Huntington Beach, Calif., assignor to TRW Inc., Los Angeles, Calif.

Division of Ser. No. 222,788, Feb. 2, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,612

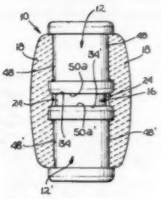
Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **6 Claims**

1. The method of making a glass encapsulated semiconductor device comprising (i) a semiconductor die having first and second faces, a circumferential edge and at least one PN junction between said faces; (ii) first and second electrically conducting metal slugs, each of said slugs having at least one layer of an electrically conducting metal coated over first and second ends thereof, and a layer of an oxide of said metal coated over a circumferential surface thereof, which method comprises the steps of:

a. holding together an assembly comprised of said die, said slugs and a glass sleeve, said die and said slugs being disposed within said glass sleeve, said first and second faces of said die being in contacting relation with said first ends of said first and second slugs respectively;

b. heating the assembly of step (a) in a partially evacuated chamber until said glass sleeve becomes molten and starts to flow;



c. injecting into said chamber a gas so as to cause a rapid increase of the pressure therein, causing thereby said glass sleeve to collapse and substantially encapsulate said die and said slugs, and, further, to form a glass-to-oxide seal with said layer of oxide on each of said slugs; and

d. brazing first and second leads to said second ends of said first and second slugs respectively.

3,844,030

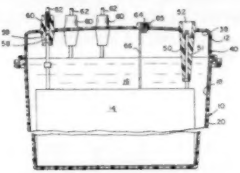
COMPOSITE OF METAL AND THERMOSET PLASTIC, AND METHOD OF MAKING IT

Robert E. Wilkinson, Lafayette, Ind., assignor to Rostone Corporation, Lafayette, Ind.

Filed Sept. 25, 1972, Ser. No. 292,188

Int. Cl. H01f *27/02*

U.S. Cl. 29—592 **15 Claims**



1. The method of forming a composite of a substrate and an overlay of fiber-reinforced thermoset plastic composition conforming and bonded thereto, which comprises

preparing a substrate having an extended surface,

coating said surface with an uncured elastomer composition in the presence of a bonding agent for bonding the elastomer to the substrate surface, and treating the coating to stabilize the same as a stable coating layer on said surface without completely curing the elastomer composition,

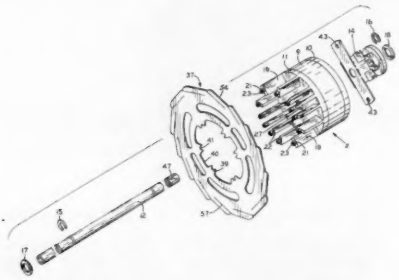
molding a fiber-reinforced thermosetting plastic molding composition in place against the incompletely cured elastomer layer under pressure and heat, in the presence of a coupling agent for bonding the plastic to the elastomer,

and maintaining the pressure and heat for a time sufficient to cure both the plastic composition and the elastomer layer, and to effect chemical bonding of the plastic and elastomer layers.

3,844,031
METHOD OF MOUNTING AND FORMING DYNAMOELECTRIC MACHINE COMPONENTS

William M. Stone; John M. Brunschwig, and Kenneth J. Zurbuch, all of Dekalb, Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Aug. 15, 1973, Ser. No. 388,672
Int. Cl. H02k 15/00
U.S. Cl. 29—596 55 Claims

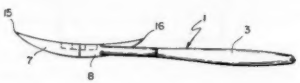


1. A method of forming and mounting a fan for use in cooling an annular group of stator winding end turns in a dynamoelectric machine comprising the steps of:
   a. forming in an annulus adjacent the outer edge thereof a plurality of cooling means which remain disposed generally in the plane of said annulus;
   b. securing said annulus to an end ring of a rotatable assembly for said dynamoelectric machine; and then
   c. deforming said cooling means from the plane of said annulus to extend generally over the outer periphery of said annular group of stator winding end turns which may be disposed adjacent said cooling means.

3,844,032
NAIL NIPPERS

Jack Siegal, 84-20 Britton Ave., Elmhurst, N.Y. 11373

Continuation of Ser. No. 265,871, June 23, 1972, abandoned. This application May 6, 1974, Ser. No. 467,429
Int. Cl. B26b 17/04; B45d 29/02
U.S. Cl. 30—28 2 Claims

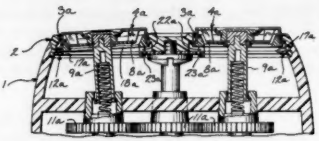


1. A cutting tool for manicuring finger and toe nails, which comprises a pair of handle portions pivotally connected at a fulcrum, each of which has curved elongate blade portions providing at least one pair of opposed abutting longitudinally oriented cutting edges terminating at their outer tips in two pairs of pointed ends, one pair directed forwardly and the other pair directed rearwardly towards the handle, wherein said pointed end of said opposed cutting edges directed rearwardly toward said handle lies out of the plane formed by said handle and said fulcrum, said curved rearwardly blade portion curving from the plane of said fulcrum and handle to said pointed end, whereby a cutting operation can be performed on the right and/or left side of the desired object without reversing the orientation of the cutting tool with respect to the object.

3,844,033
ROTARY SHAVER WITH INTERLOCKING MEANS TO PREVENT SHEAR PLATE ROTATION

Robert A. Yonkers, Grandville, Mich., assignor to Bissell Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 271,798, July 14, 1972. This application Nov. 17, 1972, Ser. No. 307,418
Int. Cl. B26b 19/14, 19/04
U.S. Cl. 30—43.5 6 Claims

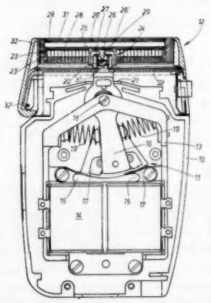


1. A dry shaver comprising:
   a. a shaver housing including a shaving head having at least one circular opening therein,
   b. a shear plate which effectively comprises:
      1. a thin-walled first member having an outer shaving face which merges into a cylindrical wall which loosely fits within said head opening for tilting relative thereto, and with said first member having a peripheral flange disposed beneath said head opening,
      2. and a second member telescopingly assembled within said cylindrical wall,
   c. a floating rotary cutting member disposed within said shear plate and tiltably supporting the latter,
   d. a rigid fixed inner shear plate stop member having an opening with at least one radially extending projection, with said stop member opening being in alignment with said head,
   e. and projection means extending longitudinally from said second member into said stop member opening and adapted to engage said radial projection to limit shear plate rotation during rotation of said cutting member.

3,844,034
DRY SHAVER

Klaus Limberg, Solingen, Germany, assignor to Robert Krups, Solingen-Wald, Germany

Filed Jan. 26, 1973, Ser. No. 326,863
Claims priority, application Germany, Jan. 25, 1972, 2203346
Int. Cl. B26b 19/04
U.S. Cl. 30—43.92 10 Claims



1. In a dry shaver, a combination comprising a housing; a shear foil on said housing; a vibratory system in said housing

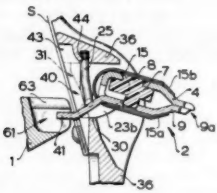
and including a cutter unit comprising a plurality of cutter blades, said unit being reciprocable beneath and relative to said shear foil, an electrically energized drive including an oscillating arm connected with a lower side of said unit for effecting reciprocation of the same, and including a vibratory armature, and springs engaging said armature and being flexible in a direction of movement of the latter, said vibratory system having an inherent vibratory frequency; and means, comprising releasable elements releasably connected with said unit, to vary the combined mass thereof and thereby change the inherent vibratory frequency of said system, so as to accommodate said inherent vibratory frequency to the frequency of the electric current by which said drive is energized by varying the mass of said cutter unit.

3,844,035

PIVOTALLY MOUNTED LONG HAIR TRIMMER

Kurt Bauerle, Schramberg-Sulgen, Germany, assignor to Firma Kuno Moser GmbH, Unterkirnach, Germany

Division of Ser. No. 163,735, July 19, 1971, Pat. No. 3,763,558. This application June 18, 1973, Ser. No. 371,246
Claims priority, application Germany, July 20, 1970, 2035870
Int. Cl. B26b *19/04*
U.S. Cl. 30—43.92 **6 Claims**



1. In a power shaver, a combination comprising a housing; an elongated hair trimmer comprising an elongated supporting member, a stationary clipping member fixed to one side of said supporting member, a movable clipping member arranged at the other side of said supporting member and reciprocable in the longitudinal direction of the latter and said stationary clipping member, and clamping means comprising a substantially U-shaped resilient clamping member partially encompassing and pressing said clipping members against each other; and mounting means in said housing means supporting said supporting member pivotable about a tilting axis extending substantially parallel to the direction of elongation of said hair trimmer for tilting the latter between an operative and an inoperative position.

3,844,036

ELECTRIC HAIR CLIPPER AND COMB FOR ANIMAL HAIR

John F. Wahl, and William M. Walton, both of Sterling, Ill., assignors to Wahl Clipper Corporation, Sterling, Ill.

Filed July 17, 1972, Ser. No. 272,305
Int. Cl. B26b *19/20*, *19/24*
U.S. Cl. 30—200 **1 Claim**

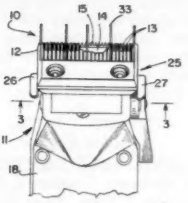
1. An electric hair clipper and associated comb for thick, tangled, matted animal hair, comprising:

an electric hair clipper having a housing, a lower stationary blade with cutting teeth and an upper movable blade with cutting teeth, the teeth of the two blades engaging to form a cutting plane;

comb guide members arranged side by side in uniformly spaced relation transversely of said blades, the number of comb guide members being about one-fourth the number of cutting teeth in said stationary blade;

attaching means interconnecting said comb guide members and detachably mounting them on said clipper in effective relation with said blades;

said comb guide members each having smooth surfaces, rounded edges and a thin lateral dimension for ease of passing through said guiding hair, a lower portion spaced from said cutting plane a distance to obtain desired cut length, said lower portion extending forwardly a distance beyond said cutting teeth and merging into a return portion extending upwardly and rearwardly above and beyond the teeth of said movable blade, said return portion of vertical dimension as small as reasonably possible to



minimize resistance to entering hair;

the return portion of at least one of said comb guide members engaging said housing to aid in positioning said comb guide members;

the return portion of at least one of said comb guide members engaging a portion of said clipper in response to forces tending to separate said comb guide members from said clipper, whereby such tendency is resisted;

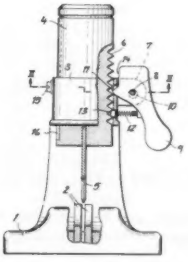
whereby thick, tangled, or matted hair, due to movement of said comb guide members through the hair, is lifted, supported and guided by said members into said cutting plane and cut by said teeth before traveling to the rearward ends of said return portions of said members.

3,844,037

CABLE CUTTER

Carl F. Geller, 3140 Luneburg, Luner Damm 17, Germany

Filed Apr. 5, 1973, Ser. No. 348,109
Claims priority, application Germany, Apr. 8, 1972, 2216954
Int. Cl. B26b *13/00*
U.S. Cl. 30—231 **6 Claims**



1. A cable cutter comprising:

a stand having a base and a sleeve overhanging said base;

at least one fixed blade on said base;

a ram vertically shiftable in said sleeve above said fixed

blade and provided with an elongated array of spaced-apart formations;

a further blade mounted on said ram and co-operating with the first-mentioned blade to sever a cable between them upon displacement of said ram toward said base;

a ram-lifting lever mounted on said stand and engageable with said formations for jacking said ram away from said base;

detent means on said sleeve engageable with said formations for retaining said ram against rebound, said lever and said sleeve being provided with pivot means swingably mounting said lever with play on said sleeve, said pivot means including a pin and a hole receiving said pin with play; and

a compression spring yieldably urging said detent toward said ram and biasing said lever out of engagement with said formation, said formation being constituted by a saw-tooth array of teeth, said lever having a projection engageable with said teeth upon displacement of said lever against the force of said spring.

3,844,038

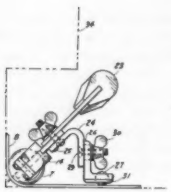
SHEET VINYL WALL TRIMMER TOOL

Edward G. Kelly, Allentown; Theodore E. Dean, Coplay, both of Pa., and Frederick S. Tuttle, Toms River, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,691

Int. Cl. B26b *3/08*

U.S. Cl. 30—293 **7 Claims**



1. An apparatus for trimming flexible sheet of flooring material including:

frame means;

a plurality of spaced, rotatable guide means disposed in said frame means to move along a cutting line;

cutting blade means intermediate and substantially in alignment with said guide means for cutting along said line;

cutting blade positioning means, said cutting blade positioning means including blade guide means for positioning said cutting blade means with respect to said frame means; and

frame support means, including adjustable means for adjusting the angle of said frame means and said cutting blade means with respect to a surface upon which the apparatus is positioned for operation.

3,844,039

DEVICE FOR OPERATING DENTAL DRILLING MACHINES

Otto Fleer, Erlangen, and Hubert Grill, Pfungstadt, both of Germany, assignors to Siemens Aktiengesellschaft, Erlanger, Germany

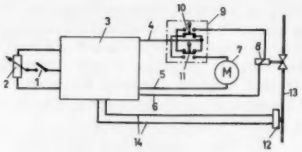
Filed May 15, 1970, Ser. No. 48,616

Claims priority, application Germany, June 28, 1969, 1932841

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **4 Claims**

1. A device for operating a dental drill with an electric motor and a dental drill with a turbine drive, said device having a control element including a potentiometer controlling said dental drills, an electronic actuating device connected with said potentiometer, an electric valve for varying



the amount of compressed air supplied to the turbine drive, and a switch device connected with said electronic actuating device and connecting selectively said electric motor and said electric valve with the electronic actuating device.

3,844,040

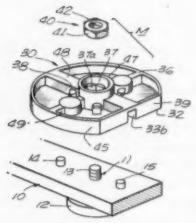
UNIVERSAL MOUNTING PLATE FOR DENTAL ARTICULATORS

Howard M. Willis, 1360 W. Sixth St., San Pedro, Calif. 90731

Filed May 22, 1973, Ser. No. 362,744

Int. Cl. A61c *11/00*

U.S. Cl. 32—32 **7 Claims**



1. A universal mounting plate assembly for dental articulators, comprising:

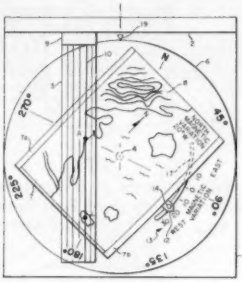
a generally flat plate having a central opening therethrough adapted to receive one end of a bolt for securing said plate in place on an articulator frame,

one side of said plate having a plurality of recesses adapted to receive corresponding dowel pins for securing said plate upon the frame in non-rotating relationship to said bolt, said bolt projecting into said opening from said one side of said plate,

the other side of said plate having a circumferential recess surrounding said central opening, the wall of said recess having a polygonal configuration; and

an insert member having an external polygonal configuration conforming substantially to the polygonal configuration of said recess, said insert member being tightly but removably secured within said recess of said plate, said insert member having a threaded opening which is of smaller diameter than said central opening of said plate whereby said insert member is held in non-rotatable engagement with said recess so that said bolt may be threaded into said insert member.

3,844,041
NAVIGATION AID
Lester E. Wilson, Jr., 1 Short St., Bedford, Mass. 01730
Filed May 8, 1972, Ser. No. 250,962
Int. Cl. G01c 21/20
U.S. Cl. 33—1 SD 9 Claims



1. A navigation aid for determining the magnetic compass heading to reach a destination from a departure point comprising,

a base having a surface,

means defining an axis of rotation extending from substantially the center of the surface perpendicular thereto,

a chart about said axis of rotation and rotatable with respect to the surface,

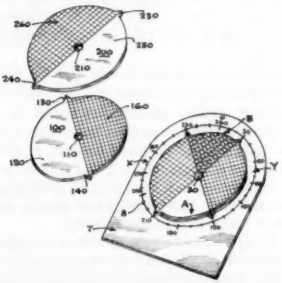
a compass rose concentric with said axis and rotatable thereon with respect to the surface,

an index on the surface for the compass rose,

a magnetic variation index on the chart and a magnetic variation scale on the compass rose, and

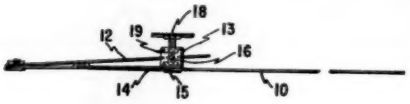
means providing course lines overlaying the chart, whereby the chart and compass rose are independently rotatable on the axis, the index on the chart aligning with a reading of the scale to account for magnetic variation when and a course line is in registration with the departure and destination points on the chart, so that the index on the surface designates the magnetic compass heading on the compass rose to reach the destination from the departure point.

3,844,042
NAVIGATION AID
Arthur G. Hodge, 1320 Sherman Ave., Janesville, Wis. 53545
Filed Sept. 29, 1971, Ser. No. 184,852
Int. Cl. B43l 7/00
U.S. Cl. 33—1 SD 1 Claim



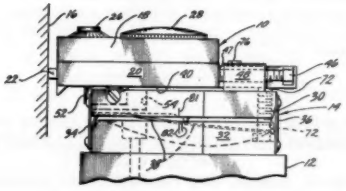
1. A device comprising a base plate having a circular scale, first and second disc members pivoted at the center of said scale for rotation relative to each other and to said plate about the center of said scale, said first disc disposed between said plate and said second disc, each of said discs having a diameter line extending across the disc, said first disc being dark in color over the one-half thereof on one side of its diameter line and light in color over the other one-half thereof, and said second disc being of a matching dark color over the one-half thereof on one side of its diameter line and transparent over the other half thereof.

3,844,043
DEVICE FOR SCALING ANGLES
Ray Gustafson, Box 136, Trimont, Minn. 56176
Filed Oct. 15, 1973, Ser. No. 406,652
Int. Cl. B43l 7/06
U.S. Cl. 33—91 2 Claims



1. A device for gauging angles comprising a slide arm, a pair of gauge arms pivoted at a common point to one end of said slide arm, slide means slidably disposed on said slide arm, said slide means including clamping means to clamp said slide means releasably in a given position on said slide arm, link means pivotally connected to said gauge arms on an upper surface of the gauge arm, said link means also being pivotally connected to a lower surface of said slide means, said slide means being thereby vertically displaced from said gauge arms, said slide arm being of normally flat material whereby the vertical displacement causes a frictional engagement between said slide means and said slide arm.

3,844,044
MOUNTING FOR PRECISION FRICTION WHEEL MEASURING DEVICES
Irven H. Culver, Playa Del Rey, Calif., assignor to Primus Mfg., Inc., San Lorenzo, P.R.
Filed May 7, 1973, Ser. No. 357,604
Int. Cl. G01b 3/12
U.S. Cl. 33—125 M 11 Claims



1. A mounting for attaching a distance measuring device having a metering wheel to a base element, the metering wheel being adapted to roll along a measuring surface with movement of the base element, the mounting comprising: a first member rotatably supporting the metering wheel, the member having a planar surface perpendicular to the axis of rotation of the metering wheel, a second member having a pair of projecting support surfaces contacting the planar surface of

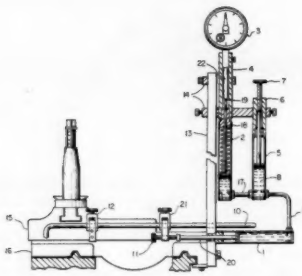
the first member at two separated points along a line extending parallel to the measuring surface, means securing the first member to the second member with the projecting surfaces in contact with said planar surface, means including a resilient loading member movably attaching the second member to the base element, and adjustable means for moving the first member and associated wheel laterally relative to the second member in a direction toward said measuring surface perpendicular to said line of engagement of the two support surfaces.

3,844,045

FLUIDIC PRECISE POSITION INDICATOR

Freeman K. Farman, 351 Whitenack Rd., Far Hills, N.J. 07931

Filed June 8, 1972, Ser. No. 261,097
Int. Cl. G01b *19/64, 13/02*
U.S. Cl. 33—125 R **8 Claims**



1. A fluidic precise position indicator comprising an actuating means including a first actuating element secured to the moving part of a machine by a first clamping means, and a second actuating element adjustably secured by a second clamping means to said first actuating element, wherein said second actuating element is located in contacting relationship with a piston rod of an actuating cylinder and is adapted for depressing said cylinder to expel a fluid into a means connecting said actuating cylinder with a hydraulic zeroing cylinder, and a means directly connecting said zeroing cylinder with a hydraulic slave cylinder with a piston and piston rod located therein and adapted for contacting engagement with an indicating means, wherein said slave cylinder piston engages a contact element of said indicating means in a direct line and wherein the first actuating element is a rod which is axially adjustable in the first clamping means and the second actuating element is a mechanical dog which is adjustable longitudinally with respect to the rod, and both clamping means are clamps.

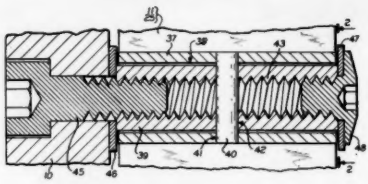
3,844,046

STUD FOR A MOVABLE GAGING ELEMENT AND ITS COMBINATION WITH THE GAGING ELEMENT AND WITH A GAGE

Stanley G. Johnson, West Hartford, Conn., assignor to The Johnson Gage Company, Bloomfield, Conn.

Filed Oct. 24, 1973, Ser. No. 409,089
Int. Cl. G01b *5/08*
U.S. Cl. 33—147 M **7 Claims**

1. A stud for mounting a gaging element on a gage frame for limited radial movement to gage a test part comprising an inner member, an outer cylindrical member having a bore therethrough receiving the inner member, pin means secured to the outer member between the ends thereof and extending diametrically including at least one pin, the bore having a dimension to allow relative movement of the outer member with respect to the inner member greater than the tolerance limit of the test part, the central axis of the stud being the central axis of the inner member, the inner member having a



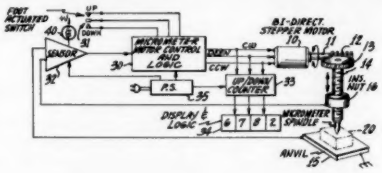
hole for each pin in which the pin is slidable for movement of the outer member relatively to the inner member, and means carried by the inner member to be used to secure the same to a gage frame.

3,844,047

ELECTRONIC MICROMETERS EMPLOYING DIGITAL PROCESSING TECHNIQUES

Robert W. Carson, 6871 Gano Dr., Little Falls, N.J. 30274

Filed Jan. 29, 1973, Ser. No. 327,558
Int. Cl. G016 *7/02*
U.S. Cl. 33—166 **9 Claims**



1. Apparatus for performing accurate measurements of a dimension of a work piece or similar article positioned at a fixed reference point, comprising:

a. a micrometer spindle rotatably positioned with respect to said reference point to move upon rotation towards or away from said point,

b. a bidirectional stepper motor having an output shaft which can rotate by a discrete number of steps in either a clockwise or counter-clcokwise direction upon application to said motor of a repetitive signal to either a first input for clockwise rotation or a second input for counter-clockwise rotation,

c. gearing means coupling said output shaft of said motor to said spindle for moving said spindle away from said reference point in one of said clockwise or counter-clockwise rotations and towards said reference point for said other rotations,

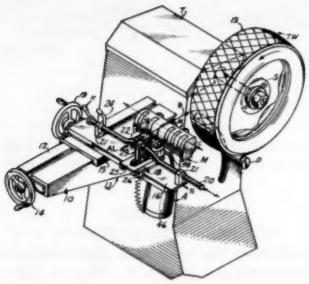
d. counting means coupled to said first and second inputs of said motor and responsive to the difference between repetitions applied to said first input as compared to repetitions applied to said second input to store therein a count indicative of the total number of effective repetitions applied to said motor to move said spindle towards said reference point, said stored count determinative of the total distance traveled by said spindle in the direction towards said reference point, and

e. time delay means having an output coupled to said first or second input of said stepper motor and responsive to said spindle contacting said work piece to activate means for displaying said stored count for a desired time, after which said time delay means causes said motor to drive said spindle away from said reference point by a given distance according to a setting of said time delay means.

3,844,048
METHOD AND APPARATUS FOR STABILIZING VEHICLES

Norvel R. Branham, Atlanta, Ga., and Peter C. Pantaze, deceased, late of Atlanta, Ga. (Gianinna Russo Pantaze, executrix)

Division of Ser. No. 803,030, Feb. 27, 1969, abandoned. This application Mar. 18, 1971, Ser. No. 125,888
Int. Cl. G01b *5/00*
U.S. Cl. 33—203.16 **8 Claims**



1. A mechanism for indicating the assymmetrical deviations in the circumferential tread of a vehicular wheel and inflated tire assembly with respect to the normal axis of rotation of the assembly on the vehicle, said indicator mechanism comprising:

support means selectively positionable with respect to the normal operating axis of rotation of the circumferential tread of the wheel and tire assembly; and,

indicator means carried by said support means adjacent the tread, said indicator means including:

a first indicator for measuring the radial deviations of the tread with respect to the normal operating axis of rotation of the wheel and tire assembly at a first point on a common line extending transversely across the tread; a second indicator for measuring the radial deviations of the tread with respect to the normal operating axis of rotation of the wheel and tire assembly at a second point on said common line spaced from said first point; and,

comparator means interconnecting said first and second indicators for indicating the absolute difference between the measurements taken by said first and second indicators,

said comparator means including an indicator plate operatively connected to said first indicator and movable in response to radial deviations in the tire tread at said first point and a pointer operatively connected to said second indicator and movable in response to radial deviations in the tire tread at said second point, said pointer overlying said indicator plate so that the relative position of said indicator plate with respect to said pointer indicates the absolute difference in relative positions of said indicators.

3,844,049
DRAWING AID SYSTEM

Paul Suvada, 2820 E. 122nd St., Cleveland, Ohio 44120

Filed Jan. 8, 1973, Ser. No. 321,559
Int. Cl. B43l *13/00*
U.S. Cl. 33—262 **2 Claims**

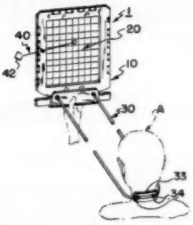
1. A drawing aid system including a frame means having a front face, a rear face and transparent central portion, and a reference grid disposed within said portion, through which a subject to be sketched may be viewed relative to said grid, said grid comprising,

a plurality of horizontal line means, and

a plurality of vertical line means intersecting said horizontal line means to establish a plurality of fixed reference points within said transparent portion as to which points on the subject may be visually correlated,

a primary positioning means comprising a first aperture in said frame means and a second aperture laterally spaced from said first aperture, a first recess which extends inwardly from one marginal edge of said frame means adjacent said first aperture and a second recess which extends inwardly from a marginal edge of said frame means adjacent said second aperture, and a flexible lanyard slidably mounted in said apertures with the ends of said lanyard projecting beyond the rear face of said frame means,

each of said lanyard ends having securement means to prevent the ends of the lanyard from sliding through said apertures so that an intermediate portion of said lanyard forms a closed loop projecting from the front face of said frame means,



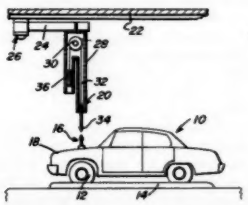
said lanyard being of sufficient length to pass around the neck of the user when the frame means is manually held at a predetermined distance from the user, a sufficient portion of the lanyard projecting beyond the rear face of said frame means so as to be windable within said recess and about the marginal edge of the frame means to secure said lanyard to the frame means when the position of the frame means relative to the neck of the user has been determined, and

a secondary positioning means comprising a movable sight means adjustably mounted on said frame means so that said sight means may be moved to selective portions of said grid for visually fixing said grid relative to a prominent reference point on the subject being graphically represented by the artist, whereby the artist can readily relocate the frame to its initial position in the event that the artist should move the frame during use thereof.

3,844,050
POSITION INDICATING DEVICE FOR VEHICLES

William E. Lynn, 209-A Millbrook Rd., Raleigh, N.C. 27609

Filed Sept. 28, 1973, Ser. No. 401,937
Int. Cl. B60r *27/00;* **G01c** *15/00*
U.S. Cl. 33—264 **12 Claims**



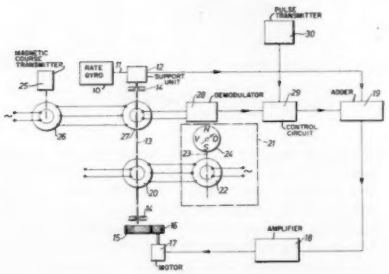
1. In combination with an overhead index target vertically aligned with a track on which a wheel of a vehicle is adapted

to be received, a device adapted to be mounted on a fender of the vehicle overlying said wheel to assist maneuvering of the vehicle to a position in which the wheel is aligned with the track, comprising a mounting element adapted to be supported on said fender, adjustable means movably mounted on the mounting element and cooperating with scale means on said mounting element for measured displacement to an operative position intersected by a vertical plane substantially extending centrally through the wheel, and visual alignment means adjustably carried by said adjustable means for angular displacement relative to the mounting element whereby said visual alignment means is aligned with said vertical plane to indicate substantial alignment of said vertical plane with the index target.

3,844,051
HEADING INDICATOR, ESPECIALLY FOR LAND VEHICLES

Klas Rudolf Wiklund, Taby, Sweden, assignor to Aga Aktiebolag, Lidingo, Sweden

Filed Sept. 14, 1971, Ser. No. 180,288
Claims priority, application Sweden, Sept. 18, 1970, 12757/70
Int. Cl. G01c *17/38*
U.S. Cl. 33—317 D **6 Claims**



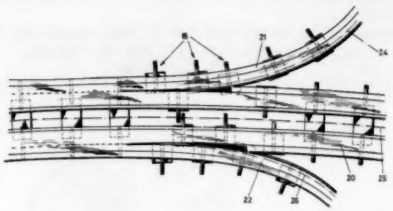
1. A heading indicator comprising a rate gyro, an integrator controlled by the gyro and a comparator generating an output signal proportional to the difference between the azimuthal information supplied from the integrator and from a magnetic heading transmitter, the output signal being delivered to a control circuit of the integrator so as to correct its output azimuthal information signal in response to said difference, the control circuit also comprising means acting as a low-pass filter for removing from the output signal of the comparator high-frequency spurious components therein, the limiting frequency of the filter being variable in response to the ground speed of the vehicle so that an increase in speed is accompanied by an increased limiting frequency.

3,844,052
METHOD OF MANUFACTURING A SCALE MODEL OF A ROADWAY

Marinus Joost Fraanje, Enckelaan; Rudolf Gerard Jan Maarhuis, Kometelaan, and Frans Noorman, Wenckebachplantsoen, all of Netherlands, assignors to Grontmij Grondverbetering- En Ontginningmaatschappij N.V.

Filed Aug. 7, 1972, Ser. No. 278,223
Int. Cl. G09b *25/06*
U.S. Cl. 35—16 **6 Claims**

1. A method of manufacturing a scale model of a road and the like, comprising drawing a plan view of the road on flexible material, marking on the road plan a plurality of coordinates corresponding to transverse lines on the road whose elevation and inclination are known, arranging on a flat surface a plurality of adjustable supports having upper support arms with the position of the supports and the elevation and inclination of the support arms each corresponding to a said coordinate on the road plan, cutting the road plan from the flexible material, and laying the cut-out road plan on the

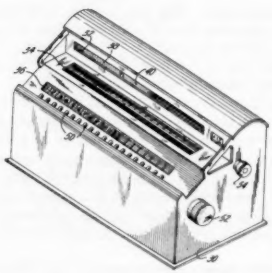


support arms with each support arm in registry with the corresponding coordinate on the road plan.

3,844,053
ARITHMETIC EDUCATIONAL TOY

George A. Morcos, 100 Beckwith Pl., Rutherford, N.J. 07070

Continuation-in-part of Ser. No. 269,478, July 6, 1972, abandoned. This application July 23, 1973, Ser. No. 382,025
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 R **15 Claims**



1. An arithmetic toy intended to teach a pre-school aged child the process of addition, and the meaning of numerical sequence and magnitude, comprising:

a. a housing;
b. a plurality of display windows set within said housing;
c. means for the illustration of numbers to be added; and
d. means for the simultaneous symbolic and numeric display of each of said numbers to be added, the magnitude of the numeric display of each one of said numbers to be added being directly proportional to the physical length of said symbolic display of each of said numbers to be added, wherein the visual output of said display means appears in said plurality of display windows.

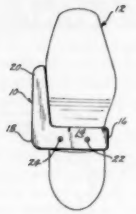
3,844,054
STABILIZER FOR A SHOE

Harold H. Morris, 710 N. 72nd Ave., Omaha, Nebr. 68114

Filed Jan. 17, 1974, Ser. No. 434,212
Int. Cl. A43b
U.S. Cl. 36—1 **7 Claims**

1. In combination with a shoe comprising a sole and a heel having bottom surfaces and inner and outer edges, a flat stabilizer comprising a base portion secured to said sole forwardly of said heel and extending laterally outwardly therefrom out-

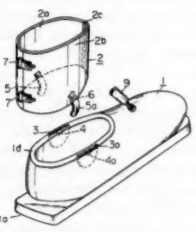
wardly of said outer edge of said sole, said base portion being positioned in substantially the same plane as the bottom surface of said heel and having an outer end portion which is positioned outwardly of said outer edge of said sole for engagement with a supporting surface.



3,844,055
SKI BOOT

Akira Koyama, Kashiwa, and Yoshinari Mochizuki, Tokyo, both of Japan, assignors to Hope Kabushiki Kaisha, Tokyo, Japan

Filed July 10, 1973, Ser. No. 377,930
Claims priority, application Japan, Sept. 27, 1972, 47-96190
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **2 Claims**



1. A ski boot made of a rigid material comprising a boot proper, a shaft for receiving the wearer's lower leg portion and means for detachably connecting said shaft to said boot proper, said means comprising a pair of upwardly opening recesses respectively formed in the upper side edge portions of said boot proper, a pair of pivoting axis portions respectively formed at the center of said recesses and a pair of hooks respectively provided at the lower side portions of said shaft and adapted to engage said recesses.

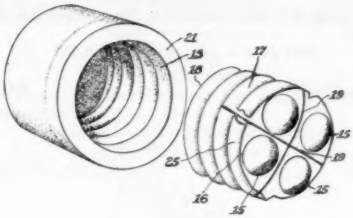
3,844,056
SHOE ANTI-SLIP DEVICE

James S. Kwan, Edmonton, Alberta, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 4, 1973, Ser. No. 394,159
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 D **1 Claim**

1. An anti-slip device in the form of a male threaded cap, together with a female threaded housing in the form of a sleeve which threadably engages the cap, said housing being mounted in a recess in the bottom of a sole or heel of a shoe, in which one end face of the cap is fitted with sharp points,

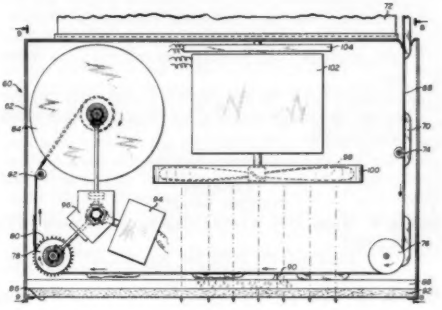
with slots formed in the face of one end of the cap and extending into the threaded section of the cap so as to extend the pitch diameter of the threaded section of the cap to provide a tight fit between the expanded threads of the cap and the threads of the sleeve housing which prevents inadvertent rotation of the cap with respect to the housing when the cap is rotated in threaded engagement with the housing to project a variable desired amount of the cap beyond the surface of an attached shoe.



3,844,057
ADVERTISING AND SALES PROMOTION METHOD AND APPARATUS

Frank Johnson, Deerfield Rd., R.F.D., No. 3, Katonah, N.Y. 10536

Filed May 2, 1972, Ser. No. 249,710
Int. Cl. G09f *13/24*
U.S. Cl. 40—106.22 **4 Claims**



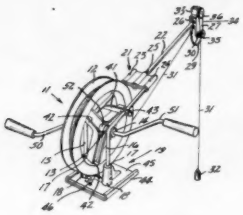
1. A method of advertising or promoting the sale of consumer goods by accompanying the visual display or presentation of the goods with an odor characteristic of the goods comprising providing a visual display of the goods; and in a controlled area in immediate proximity to the display location, over a predetermined extended, controlled time period, providing an odor characteristic of the goods of predetermined controlled strength so as to stimulate and heighten the sensations of prospective customers in the immediate vicinity of said controlled area with respect to enhancing their desire to purchase and use or enjoy the goods, the step of providing the odor over the extended time period being carried out by providing a plurality of sealed containers each individually capable of being cut open to discharge by gravity a predetermined, uniform, fixed quantity of an odor producing liquid and cutting open said containers serially to cause a one-time action with respect to each said container whereby a fixed quantity of liquid in said container flows by gravity onto an absorbent material and vaporizing the odor essences from said absorbent material into the atmosphere at a predetermined

regulated rate so as to provide a sustained effect and presence of said odor.

3,844,058
DOWN-RIGGER REEL

Jack C. King, 678 Massachusetts Ave., North Muskegon, Mich. 49445

Filed June 8, 1973, Ser. No. 368,347
Int. Cl. A01k *89/00*
U.S. Cl. 43—27.4 **6 Claims**



1. A down-rigger reel comprising:
a frame formed from a pair of rod stock members;
bearings secured to each of said rod stock members;
a pedestal plate having sockets receiving one end of said pair of rod stock frame members;
a line receiving drum between said pair of rod stock members and said drum supported rotationally in said bearings;
a crank handle operably connected to said drum for selected winding or unwinding rotation thereof;
a splice element socketing the outboard ends of said rod stock frame elements and having a parallel socket intermediate said socketing for said outboard ends, said splice element aligning said bearings and said rod stock members;
an extension rod in the intermediate of said splice element sockets; and sheave means at the unsocketed end of said extension rod.

3,844,059
FISHING DEVICE

Russell W. Weber, N88 W14822 Main St., Menomonee Falls, Wis. 53051

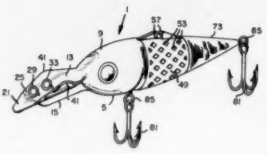
Filed Oct. 17, 1973, Ser. No. 407,341
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.13 **8 Claims**

1. In a diving sinker having a first connection to which a bait may be connected, and having a second connection to which a trolling line may be connected, the improvement comprising a weight movably connected to said diving sinker for movement from one side to the other with respect to the longitudinal center line of the diving sinker to control the lateral position of the diving sinker and bait with respect to a boat during trolling, and means for locking the weight in a selected position.

3,844,060
LIVE BAIT FISHING LURE

Masami Mike Kurachi, 2031 Yosemite Blvd., Modesto, Calif. 95351

Filed Oct. 29, 1973, Ser. No. 410,419
Int. Cl. A01k *85/00*
U.S. Cl. 43—41 **6 Claims**

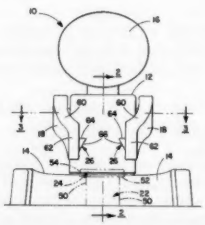


1. A fishing lure designed when towed to emulate the travel of the fish through water comprising:
a generally fish shaped body;
a substantially planar member extending from the vicinity of the top front of the fish shaped body, said substantially planar member defining a plane substantially perpendicular to the plane of symmetry of the fish shaped body;
a generally planar tip extending from the end of the planar member further from the fish shaped body, the plane defined by the tip forming an acute angle with the extension of the plane defined by said planar member and being substantially perpendicular to the plane of symmetry of the fish shaped body, the tip serving to impart a wiggling or bobbing motion to the lure; and a plurality of supports adapted for being fastened to a fish line, said supports being attached to the top of said planar member progressively farther from the front of the fish shaped body whereby the support nearest the front of the fish shaped body is the more useful for deep fishing and the support nearest the tip is the more useful for shallow fishing; and
a pair of wings, one on each side of the planar member, the wings extending upwardly from the planar member and logitudinally thereof whereby water passing over the planar member as the lure is being pulled forwardly through the water passes between the wings and thence over the top of the fish shaped body thereby stabilizing the direction of travel of the lure.

3,844,061
ANIMATED LIFTING TOY

Adolph E. Goldfarb, Tarzana, and Manuel Fernandez, Canoga Park, both of Calif., assignors to Adolph E. Goldfarb, Tarzana and Erwin Benkoe, Encino, both of, Calif.

Continuation-in-part of Ser. No. 118,778, Feb. 25, 1971, Pat. No. 3,751,849. This application Feb. 21, 1973, Ser. No. 334,443
Int. Cl. A63h *11/00*
U.S. Cl. 46—119 **9 Claims**



1. Play apparatus comprising:
a plurality of liftable play objects, each of said play objects

having a pair of opposed side walls and a projection disposed adjacent the upper edge of each of said side walls,

an animated toy figure for picking up a plurality of said play objects which are sequentially placed in front of said figure, said figure comprising:

a body adapted to rest upon a supporting surface;

arm means extending forwardly from said body, and

control means operatively associated with said arm means for lowering and raising at least said arm means of said figure,

a first lifting means on said arm means, and a second lifting means on said play objects, said second lifting means comprising said projections on said play objects, said first and second lifting means being arranged to releasibly engage with one another, said first and second lifting means being proportioned and arranged to overlie one another when one of said play objects is placed on the supporting surface in a predetermined position in front of said body, one of said lifting means being retractable by virtue of engagement of the other of said lifting means incident to downward movement of said arm means relative to one of said objects in said predetermined position in front of said figure, to thereby effect interengagement between first and second lifting means.

3,844,062

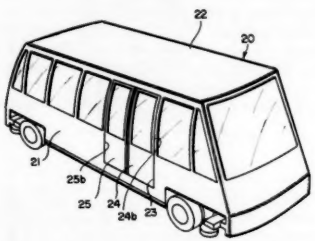
SLIDING DOOR MECHANISM WITH SEMI-PLUG FEATURES

Kristupas Daugirdas, Wilmette, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Nov. 30, 1972, Ser. No. 310,983

Int. Cl. E05f *15/14*

U.S. Cl. 49—28 **21 Claims**



1. In a vehicle having a door opening in the vehicle wall selectively opened and closed by at least one sliding door leaf, a mechanism for supporting the door leaf and driving same between open and closed position relative the door opening by causing the door leaf to be moved through a compound movement inwardly of the vehicle wall and laterally of the door opening to a fully open position inside the vehicle wall and along one side of the opening, said mechanism comprising upper and lower straight door tracks positioned above and below the door opening and inside the vehicle wall, means received by at least one of said door tracks for supporting said door leaf, said door tracks being at a slight incline relative the door opening so that the leading edge of the door leaf moves directly into and out of the closed position, follower means on the leading edge of said door leaf slidably received in said door tracks to guide the leading edge of the door leaf, upper and lower plug tracks positioned above and below and laterally of the door opening and inside the vehicle wall, said plug tracks including a straight section inclined relative the vehicle wall and a curved section adjacent the door opening, said straight section of each plug track being substantially parallel to the adjacent door track, follower means at the trailing edge of said door leaf slidably received in said plug tracks to guide the trailing edge of the door leaf and plug the trailing edge of the door relative the door opening during movement of the door leaf into closed position, door actuator means, and linkage means for drivingly connecting said door actuator means to the door leaf intermediate the leading and trailing edges thereof to apply a force directly to the door leaf and drive same between open and closed positions.

3,844,063

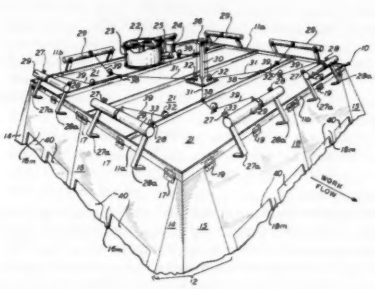
IRONER CANOPY

Ralph Eugene Jackson, Covington, Ky., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 12, 1972, Ser. No. 314,413

Int. Cl. E04b *1/344*

U.S. Cl. 49—115 **4 Claims**



1. An ironer canopy comprising an upper rectangular frame of angle iron construction, corner leg supports of angle iron contruction each comprising an upper horizontal portion secured to said rectangular frame, an outwardly and downwardly inclined side wall portion and a bottom mounting portion, corner side-wall structures secure to the respective corner portions of said frame each comprising a first segmental triangular wall section secured to the inclined side-wall portion of the respective leg support and an integral second segmental triangular wall section at right angles to said first wall section and at the same inclination to the vertical, and inclined side-wall panels between said corner side-wall structures hinged at the top of the panels to said rectangular frame to provide said canopy with inclined walls on all sides extending from said upper rectangular frame down to said bottom mounting portions when said side-wall panels are closed and with said sides open from corner structure to corner structure when said side-wall panels are open.

3,844,064

GUIDING MECHANISM FOR SLIDING WINDOWS OF AUTOMOTIVE VEHICLES

Kazuo Yamaha, and Yasumasa Okada, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation-in-part of Ser. No. 220,165, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,400

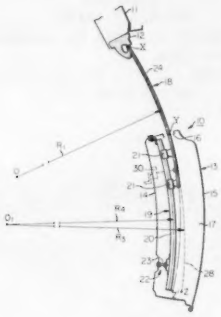
Claims priority, application Japan, Feb. 5, 1971, 46-4605

Int. Cl. E05f *11/38*; B60j *1/16*

U.S. Cl. 49—348 **2 Claims**

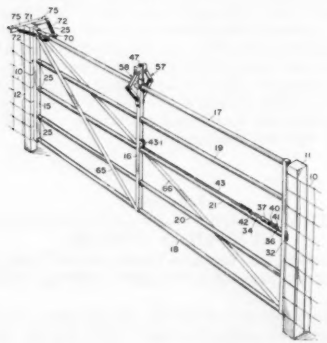
1. A guiding mechanism for guiding a slidable curved window pane during raising and lowering thereof between uppermost and lowermost points through an opening formed in a vehicle door body having inner and outer panels, which window pane has a predetermined radius of curvature, said mechanism comprising, in combination, a curved, elongated guide rail having one end pivotally fixed in the upper portion of the vehicle door body and the other end adjustably positioned in the lower portion of the vehicle door body, at least two sliding rollers mounted on said window pane and slidably engaged

with said guide rail for guiding said curved window pane during raising and lowering thereof, and adjusting means provided between the inner panel of said door body and said other end of said guide rail for effecting adjustable positioning of said other end of said guide rail in relation to said inner and outer panels, the curvature of a sliding surface of said guide



rail having a center point concentric with a center point of an arcuate path crossing said uppermost and lowermost points and having a radius of curvature smaller than that of said arcuate path but greater than that of said window pane, and said center point of said curvature of the sliding surface of said guide rail being offset from the center point of said window pane.

3,844,065
GATES
Paul Hrubik, P.O. Box 246, Orwell, Ohio 44046
Filed May 24, 1973, Ser. No. 363,361
Int. Cl. E05f *13/02*
U.S. Cl. 49—364 **6 Claims**



1. A gate for an opening in an enclosure, said opening being defined by spaced posts rigidly held within upright position,

said gate comprising a rectangular frame of a horizontal length to fit between said posts and having one side hinged to one post so that the other side may swing horizontally toward and away from the other post, said frame having an upright tubular member intermediate its horizontal length, and a slide tube within said tubular member,

a latch plate secured to said other post and having a bolt-receiving hole,

a latch bolt slidably supported on said gate and a spring for urging said bolt to extended position to enter said latch plate hole,

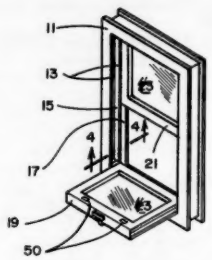
toggle means carried by said gate and movable between make and break positions, said toggle means comprising a pair of levers pivoted to each other, the end of one lever being pivoted to said upright tubular member and the end of the other lever being pivoted to said slide tube,

means connecting said slide tube to said latch bolt,

said toggle means being urged to toggle break position and in such position said latch bolt is extended for fitting within said latch plate hole,

and said toggle means being movable toward toggle make position and in such position said connecting means causes retraction of said latch bolt from extended position.

3,844,066
TILTABLY-REMOVABLE AUTOMATICALLY-LOCKING WINDOW SASH
William Douglas Nobes, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.
Filed July 13, 1073, Ser. No. 379,041
Int. Cl. E05d *15/22*
U.S. Cl. 49—182 **2 Claims**



1. A tilt-out window construction comprising a support frame having a guide channel with an elongated opening,

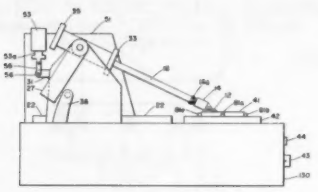
a sash mounted for vertical movement in said frame which is pivotal about an axis normal to said movement into a position extending out of said support frame,

a sash balancing mechanism disposed in said guide channel, a vertically slidable slide block mounted in said guide channel connected to sash balancing mechanism said slide block having a generally rectangular shape with means at the head for receiving attaching means to the balance mechanism, and a transverse partial bore therein integral with said block directed to said elongated opening, said transverse partial bore having an out of round rotary locking element with a camming surface rotatably journaled therein, and a deformable, flexible leg integral with said slide block extending from the head of said slide block and out of contact with said slide channel, said deformable flexible leg having an extension on one side with a locking surface for contacting said side channel, said extension of said leg with said locking surface being located in a position with respect to said rotating locking element so that said locking surface is spaced away from a line extending from the center of said rotating locking element through the line of contact of said rotating locking element with said resiliently flexible arm, said out of round rotary locking element being connected to said sash and actuating said locking surface into engagement with said channel in response to the tilting of the window sash.

3,844,067
KNIFE SHARPENER

John P. Guerra, Buffalo, and Chester S. Ingraham, East Aurora, both of N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed Dec. 18, 1972, Ser. No. 316,317
Int. Cl. B24b 7/02, 3/48
U.S. Cl. 51—58 5 Claims

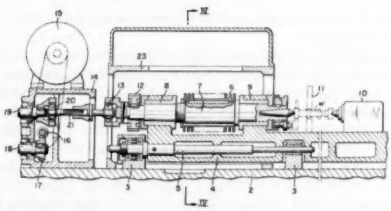


1. Automatic knife sharpening apparatus comprising:
a planar glass honing plate;
a honing plate positioning means to support said honing plate, said honing plate positioning means being selectively operative to position said honing plate in a one of two positions, each of said positions for maintaining the honing surface of said honing plate in a one of two parallel planes;
stroking means for alternately stroking in a straight line a first and second side of a microtome knife against said honing plate positioned by said positioning means, said knife being positioned by said stroking means at a corresponding one of two predetermined angles to said plate; and
a pressure means for selectively applying a substantial pressure to said knife against said honing plate including a solenoid activated forcing means for selectively generating a substantial mechanical force, and a scissors spring force transfer means for transferring said selectively generated force to said stroking means for applying substantial pressure to said knife against said honing plate.

3,844,068
CAM GRINDING MACHINE

Tokio Shiga, Okazaki, and Kikuziro Nomura, Nagoya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha

Filed May 15, 1973, Ser. No. 360,574
Claims priority, application Japan, May 15, 1972, 47-48380
Int. Cl. B24b 17/00, 5/16
U.S. Cl. 51—101 R 7 Claims

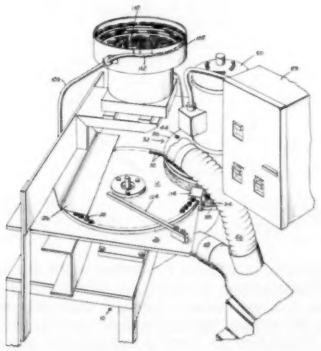


1. In a cam grinding machine having a master cam of a predetermined profile which is pivotably supported, and axially aligned and synchronously rotated with a workpiece, and which contacts under pressure, a cam roller which is relatively indexed upon a movable traverse table for suitably accomplishing the cam reproduction by grinding, whereby the workpiece is ground by a grinding wheel, the improvement comprising:
a bed slidably supporting said movable traverse table;
a roller supporting means mounted upon said traverse table which is movable in a direction parallel to the axis of said master cam;
said master cam including a plurality of coaxially disposed cam members, the axial distance between said cam members comprising the pitch interval of said master cam;
a large roller and a small roller respectively supported by said roller supporting means so as to have a point of contact with said master cam within a common plane and which are arranged to shift a distance of one half pitch relative to the pitch interval of said master cam;
a rotary shaft rotatably supported by said traverse table and adapted to be rotated at the same time as said traverse table is movably indexed so as to shift said roller supporting means said predetermined amount;
a double star gear shiftably and rotatably connected with said rotary shaft having first and second star gears, said gears having a half phase difference therebetween;
a dog fixed upon said bed for engaging said double star gear when said traverse table is indexed; and
shifting means for shifting said double star gear to a position wherein said dog fixed upon said bed supporting said table is connected to either said first or second star gear, whereby said double star gear may be shifted depending upon the decrease in the grinding wheel radius so as to compensate for the lift error caused by said decrease in said grinding wheel radius within an allowable tolerance and simultaneously said roller supporting means may be shifted by indexing said traverse table so as to shift said large roller contacting said master cam to said small roller for contacting said master cam.

3,844,069
AUTOMATIC LOADING MECHANISM AND GRINDING MACHINE

Leland R. Shank, 513 S. Wayne St., Angola, Ind. 46703

Filed Aug. 15, 1972, Ser. No. 280,778
Int. Cl. B24b 7/16
U.S. Cl. 51—118 9 Claims



1. In a machine for grinding the opposite ends of helical springs, mechanism comprising a horizontally disposed carrier plate mounted for rotation about an upright axis, means for continuously rotating said plate at a predetermined speed, upper and lower spaced apart grinding wheels disposed in parallel straddling relation with respect to a peripheral portion of said carrier plate, the facing surfaces of said wheels being substantially flat and parallel and of an abrasive grinding material, the axis of each grinding wheel being radially spaced from said carrier plate axis, a stationary floor member disposed beneath said carrier plate, said floor member having an

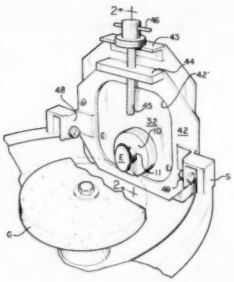
upper surface immediately adjacent to said carrier plate lying in a plane substantially coincident with the upper surface of said lower grinding wheel, said floor member having an edge disposed closely adjacent to said lower grinding wheel thereby to provide a transition path from springs moved from said floor member to the space between said grinding wheels, a plurality of holes in the peripheral portion of said carrier plate circularly arranged coaxially with respect to said up right axis, the facing grinding surfaces of said wheels being of annular shape, said grinding surfaces straddling said carrier plate with the inner perimeters thereof so positioned as to have the full radial extent of said surfaces traversed by said holes in said carrier plate as the latter is rotated whereby springs carried by said holes in said rotating plate will follow a path that contacts the full radial extent of said grinding surfaces, a spring-feeding device disposed above and in registry with said holes for selectively introducing springs into said holes, said device having a magazine for storing a plurality of helical springs in end-to-end relation, a nozzle connected to said magazine, means mounting said nozzle and magazine for movement a predetermined distance above and in parallelism with said carrier plate in cooperative relation with said holes, and rotary cam means responsive to rotation of said carrier plate for reciprocating said nozzle and magazine in spring-feeding synchronism with said holes.

3,844,070

APPARATUS FOR GRINDING A CABOCHON OR THE LIKE

Glen H. Reed, 2536 Torisdale Ct., Toledo, Ohio 43611

Filed July 9, 1973, Ser. No. 377,636
Int. Cl. B24b *17/02*
U.S. Cl. 51—127 **4 Claims**



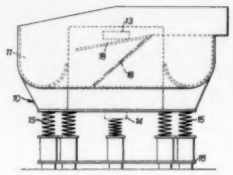
1. Apparatus for grinding a cabochon or the like to a circular or elliptical shape comprising a stone-carrying assembly including a driven member having a transverse rectilinear guide, a driver stem having a part movable in said guide, a second driven member fixed to and movable with said first driven member and having an elongate cam guide perpendicular to said transverse guide, a stationary cam engaged by said cam guide to effect predetermined movement of said cam guide upon turning movement thereof, said driver stem extending freely through said second driven member and said cam, a stationary sleeve bearing for said driver stem, a handle for turning said driver stem, means for adjusting the position of said stationary sleeve relative to said assembly for causing the latter to travel circularly or elliptically, and said adjusting means comprises an adjuster plate on which said stationary sleeve is rigidly mounted, and means for shifting said adjuster plate for altering the position of said driver stem relative to said assembly.

3,844,071

APPARATUS FOR VIBRATORY FINISHING

William John Barlett, Hempstead, and Frederick George Boniface, Hemel Hempstead, both of England, assignors to Roto-Finish Limited, Hertfordshire, England

Filed Nov. 28, 1973, Ser. No. 419,660
Int. Cl. B24b *31/06*
U.S. Cl. 51—163 **5 Claims**



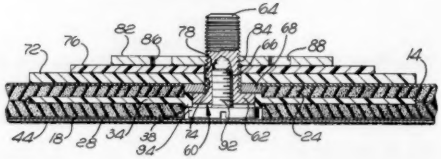
1. A vibratory finishing machine comprising an annular treatment chamber for a finishing medium and workpieces non rotatably mounted on a spring suspension; a motor securely mounted to said chamber and having a motor shaft disposed vertically on the axis of said chamber; first and second eccentric weights mounted on said shaft in axially spaced relation and angularly spaced relation to each other; and means responsive to interruption of rotation of said motor shaft to effect reversal of the relative angular position of said weights.

3,844,072

REPLACEABLE RESILIENT PAD ASSEMBLY FOR ABRASIVE FINISHING ARTICLES

Jack M. Haigh, 14 Overlook Pl., Rye, N.Y. 10580, and Joseph H. MacKay, Jr., 20 Vanech Dr., Stamford, Conn. 06904

Filed Jan. 5, 1973, Ser. No. 321,431
Int. Cl. B24d *13/14, 13/20*
U.S. Cl. 51—378 **7 Claims**



1. A reversible symetrically formed replaceable pad assembly comprising:

a body of resilient material having a central opening therein, said body having a disc-like member formed therein, said disc-like member radially extending into said body and having a central opening formed therein, said disc-like member central opening being smaller than said body central opening, an axially central portion of said disc-like member thereby extending into said body opening and having a thickness thereat greater than remaining portions of said disc-like member but less than the thickness of said body thereat, said openings being co-axial with each other, said body having a first side face and a second side face;

means formed on said faces for securing an abrasive finishing article to either one of said faces;

drive means; and

securing means positioned in said openings for securing said assembly to said drive means for imparting movement to said assembly, said securing means having an outer flange smaller than said body opening for abutting said axial

central portion of said disc-like member and being operable when inserted into said opening from either of said said faces and secured therein.

3,844,073

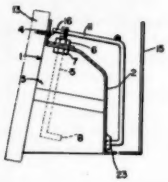
MEANS FOR FORMING STRUCTURES OF COMPLEX CONFIGURATION

Harold Peletz, c/o Santa Rosa Cast Products, Inc., 471 W. College Ave., Santa Rosa, Calif. 95401

Continuation of Ser. No. 225,992, Feb. 14, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,210

Int. Cl. E02d *29/10*

U.S. Cl. 52—20 **4 Claims**



1. A form assembly for in-the-field casting of reinforced concrete drainage structures having an external face portion constituting a reentrant concavity of complex geometrical configuration in such structure, including

an integral preshaped form liner member of generally concavo-convex configuration corresponding to such reentrant concavity of complex geometrical configuration in such structure, said integral preshaped form liner member having a front surface and a rear surface, said front surface forming such external face portion of the completed structure,

a network of rod-like reinforcing members of generally concavo-convex overall configuration adapted to substantially encompass said rear surface of said integral preshaped form liner member, selected ones of said rod-like reinforcing members having end portions of generally hooked configuration,

means on said rear surface of said integral preshaped form liner member for receiving and holding captive said hooked end portions of such rod-like reinforcing members to mount said network of reinforcing members on said rear surface of said integral preshaped form liner member in generally spaced relationship therewith,

an elongate reinforcing nosing member of substantially L-shaped cross-section mounted on said integral preshaped form liner member adjacent an edge thereof to reinforce such edge of said form liner member against bending forces, and

mounting means forming a part of said elongate reinforcing nosing member for attaching thereto ancillary form members of relatively simple geometrical configuration to complete a form assembly of desired overall configuration.

3,844,074

WALL CONSTRUCTION FOR SPHERICAL STRUCTURES

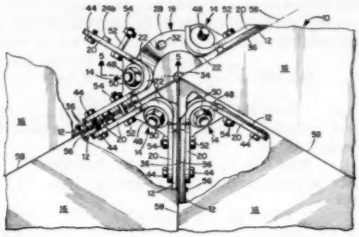
William W. Ahern, Belmont, Mass., assignor to Geometrics, Inc., Cambridge, Mass.

Filed Apr. 13, 1973, Ser. No. 351,035

Int. Cl. E04b *1/32*

U.S. Cl. 52—81 **5 Claims**

1. A wall construction for a spherical wall structure, comprising in combination: elongated frame members; first connecting elements, each of which is provided with angularly disposed legs joined by a nose section; first means for attaching said frame members to the legs of said first connecting elements to form triangular frames wherein the legs and apexes of said frames are defined respectively by said frame members and said first connecting elements; triangular panel members overlying said frames, said panel members having peripheral flaps overlapping the exterior sides of said frame members; second connecting elements, each having a truncated conical wall; and second means for attaching the nose



sections of said first connecting elements to the walls of said second connecting elements, the positions of said first connecting elements when thus attached being such that the peripheral flaps of adjacent panel members will abut along planes extending radially from the centers of said second connecting elements with the ends of said flaps being cut away to thereby permit the apexes of said triangular panel members to overlie said second connecting elements.

3,844,075

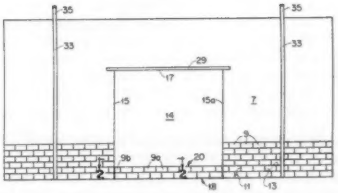
PREFABRICATED PANEL WITH DOOR OPENING

Leon H. Tolleson, Phoenix; Paul M. Thomas, Paradise Valley, and Robert T. Mizer, Phoenix, all of Ariz., assignors to Tomax Corporation, Phoenix, Ariz.

Filed July 9, 1973, Ser. No. 377,578

Int. Cl. E04c *2/00*

U.S. Cl. 52—100 **4 Claims**



1. A prefabricated masonry wall panel of mortared building blocks which may be lifted and transported to a job site for installation and which includes a door opening comprising

a lowermost, continuous course of aligned blocks mortared together with head joints, which course extends the entire length of the panel, said lowermost course including a weakened mortared head joint aligned with each margin of the door opening,

a second, continuous course of aligned blocks mortared together with head joints, which course extends the entire length of the panel, said second course including a weakened mortared head joint aligned with each margin of the door opening,

said second course overlying said lowermost course and being connected thereto by a mortared bed joint, said mortared bed joint having embedded therein at least one, elongated, tension resisting member which extends be-

tween the marginal edges of the door opening and to a point beyond each of the marginal edges thereof to anchor said tension resisting member in the bed joint mortar outside of the marginal edges of the door opening,

and subsequent sequential courses of blocks which are mortared together in the desired configuration for said wall panel with the door opening laid upon said second course,

whereby said panel may be lifted and transported to a job site for installation whereupon said lowermost course and said second course intermediate the margins of the door opening may be broken away to complete the door opening.

3,844,076

BASEMENT WINDOW SHIELD

Eberhard Schock, Kastanienhalde 9, 7571 Varnhalt/Baden, Germany

Filed Nov. 3, 1972, Ser. No. 303,659

Claims priority, application Germany, Nov. 17, 1971, 7143349

Int. Cl. E06b *5/02*

U.S. Cl. 52—107 **5 Claims**

1. A prefabricated shield adapted for attachment to a building wall at a level below grade in front of an aperture in the wall to admit air and light thereto, said shield comprising a thin wall body having an open upper end and defining a rear opening adapted to overlap the aperture in the building wall, said upper end of the body being of quadrilateral shape, the remainder of said body depending from said upper end and being continuously curved in three dimensions over substantially its entire extent such that horizontal and vertical planes passing through said body form continuous curved lines of intersection therewith, whereby force applied to the surface of said body produces substantially only compressive stresses in the body with the absence of flexural stresses, the wall of the body flaring upwardly and outwardly to form a smooth transition with the quadrilateral shape of said upper end, said body comprising side flanges integral with the wall of the body, said side flanges having planar surfaces for attachment to said building wall, said side flanges being provided with respective lines of apertures, said side flanges being positioned within the horizontal confines of the quadrilateral shape of the upper end of the body.

3,844,077

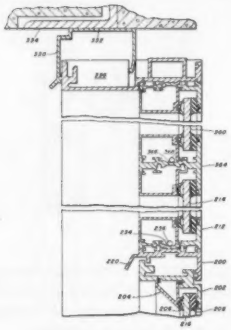
BUILDING WALL ASSEMBLY WITH WEEPAGE CHANNELS

Lawrence T. Vance, 1429 Little Whale Rd., Pittsburgh, Pa. 11566

Division of Ser. No. 252,503, May 11, 1972, Pat. No. 3,758,997, which is a division of Ser. No. 92,001, Nov. 23, 1970, Pat. No. 3,678,625. This application May 2, 1973, Ser. No. 356,538

Int. Cl. E06b *1/16, 1/18, 7/14*

U.S. Cl. 52—209 **5 Claims**



1. A building wall assembly comprising

a pair of spaced generally parallel vertically disposed hollow load bearing mullions,

each said mullion formed from a first elongated mullion element and a second elongated mullion element,

said first and second mullion elements each having a body portion, a rearwardly disposed flange extending transversely inwardly from said body portion and a forwardly disposed flange generally parallel to said rearwardly disposed flange extending transversely inwardly from said body portion to define a generally channel shaped mullion element,

each said first and second mullion element body portion having a generally Z-shaped configuration with a forward section, a rear section and a connecting transition section,

said mullion elements being secured to each other so as to permit relative longitudinal sliding movement responsive to expansion and contraction caused by changes in thermal conditions,

each said mullion element body portion having at least one rearwardly disposed outwardly facing recessed portion,

said generally channel shaped mullion elements disposed with their openings facing each other with said flanges cooperating to define a closed hollow mullion,

one of said flanges of said first and second mullion elements terminating in a transversely inwardly open channel and an adjacent flange of the other said mullion element having a tongue portion extending into said channel,

each said mullion having fixedly secured thereto a substantially rigid generally L-shaped framing member having a first portion disposed adjacent one said mullion body portion with at least a portion thereof extending into said rearwardly disposed recessed portion and a second portion disposed generally perpendicular to said first portion and projecting away from said mullion element body portion,

said generally L-shaped framing member disposed in contact with said rear section, whereby said first portion of said generally L-shaped framing member is at least partially recessed with respect to the outer surface of said forward section,

said recessed portion and said first portion of said generally L-shaped framing member being so configurated as to provide a first relative position wherein said first portion is at least partially received within said recessed portion with said second portion projecting from the rear portion of said first portion and a second position wherein said first portion is at least partially received within said recessed portion with said second portion projecting from the forward portion of said first portion, whereby said assembly may permit panel replacement either from the interior side or exterior side of said wall assembly,

said generally L-shaped framing member having said second portion positioned adjacent a marginal portion of said panel,

first panel retaining means cooperatively associated with said generally L-shaped framing member securing a panel to said hollow load bearing mullion,

a first compressible gasket element secured to said second portion in contact with a surface of said panel,

said first portion of said L-shaped member having recesses for receipt of a panel retaining clip,

said first panel retaining means having a panel retaining clip secured to said L-shaped member,

a second compressible gasket secured to said panel retaining clip with said gasket in contact with a surface of said panel, and

second panel retaining means generally horizontally disposed securing horizontal marginal portions of said panel and having ends secured to said mullions, whereby said panel is substantially continuously secured in position by said L-shaped framing member and said first and second panel retaining means and is supported by said mullions.

3,844,078

COUPLING ARRANGEMENT FOR CONNECTING AN INSULATING HOUSING ENCLOSING AN ELECTRIC DEVICE TO AN INSTALLATION PANEL DUCT

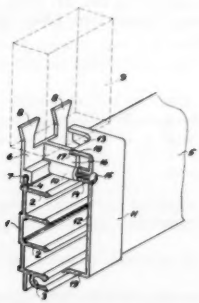
Borge Jensen, Ourgade 42; Aksel Fischer, Hojdevej 52, both of DK-2100 Copenhagen, and Rolf Christian Luja Falck, Sonderholt Sorup, DK-3480 Fredensborg, all of Denmark

Filed Oct. 24, 1972, Ser. No. 300,016

Claims priority, application Denmark, Oct. 25, 1971, 5162/71; Oct. 29, 1971, 5292/71

Int. Cl. H02g *3/08;* **E04f** *17/08*

U.S. Cl. 52—221 **6 Claims**



1. In an installation panel duct adapted to contain electric wires for power current as well as for low voltage communication, the panel duct consisting of an elongated base member and an elongated cover member adapted to be secured to said base member by means of a snap-fit connection, the arrangement of a coupling device for connection an insulating housing for an electric device such as a switch or an outlet socket to the panel duct in alignment with an opening in the cover member, said coupling device comprising a primary and a secondary coupling member, said primary coupling member having means for snap-fit connection with the base member and means for attachment to said insulating housing, the secondary coupling member consisting of a cover plate for covering said opening in the elongated cover member and being provided with means for detachable connection with the primary coupling member and means for snap-fit connection with the base member.

3,844,079

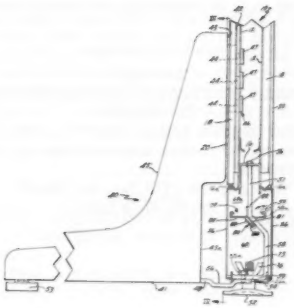
SUPPORT SYSTEM FOR PARTITIONS

Alexander A. Karrip, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Sept. 28, 1973, Ser. No. 401,625

Int. Cl. E04c *2/52;* **E04b** *2/82*

U.S. Cl. 52—221 **18 Claims**



1. A partition including panel means and supporting means depending below said panel means to define a base area below said panel means, said supporting means comprising: a rigid strap member extending downwardly generally from each end of said panel means, generally centrally between the opposing faces thereof; said strap member being bent outwardly to define an angular, sloping wall and then downwardly at a point below said panel means to define a back wall and then inwardly to define a bottom wall, thereby giving said strap the appearance generally of an "L" with a generally "C" shaped deviation in the leg of the "L" to allow base wiring to pass therearound.

3,844,080

SUSPENDED CEILING

James McFarlane Brock, Knebworth; Anthony David Gillan, Hoddesdon; Adrian Marden, Welwyn Garden City, and Arthur Christopher Pancewicz, Connington near Peterborough, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 178,888, Sept. 8, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,958

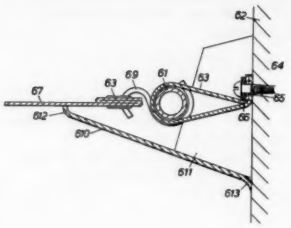
Claims priority, application Great Britain, Feb. 2, 1972, 4838/72; Oct. 13, 1972, 47292/72

Int. Cl. E04b *5/52*

U.S. Cl. 52—222 **14 Claims**

1. A suspended ceiling comprising a track secured to a basic building structure around the periphery of the ceiling, and a flexible membrane attached at its edges to the track by a multiplicity of individual attachment members extending outwards from spaced-apart points along said edges and engaging the track so as to be movable therealong, the membrane being

maintained thereby in a stretched condition across the area defined by the track, a covering being secured below the edges



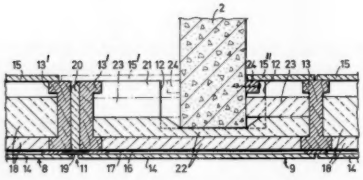
of the ceiling so as to conceal the attachment members and track.

3,844,081

OUTER WALL STRUCTURE OF PREFABRICATED WALL ELEMENTS

Knut Lennart Bergvall, Lidingo, and Ernst Erik Dahlberg, Stockholm, both of Sweden, assignors to Interoc Aktiebolag, Malmo, Sweden

Filed Aug. 22, 1973, Ser. No. 390,674
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 **6 Claims**



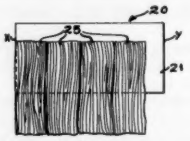
1. An outer wall structure in a building of the kind having a carcase comprising at least two vertically spaced floor structures and, extending between them, a plurality of horizontally spaced, erect structural members having outwardly facing narrow surfaces extending in a common vertical plane and forming with the outer edges of the two floor structures a horizontal series of spaced openings, the wall structure proper being composed of a plurality of prefabricated, plate-like wall elements secured to the carcase in side-by-side relationship with sealed vertical joints between then so as to entirely cover the outside of the erect structural members and to form all by themselves the building facade, each of the wall elements entering inside said vertical plane with a part of its thickness, wherein said vertical joints between adjacent wall elements are located between the erect structural members of the carcase, and wherein at least most of said wall elements have in their inner side at least one vertically extending channel-like recess receiving an outer portion of a related one of said erect structural members.

3,844,082

BUILDING EXTERIOR PANELLING WITH END-TO-END OVERLAP

Otis M. Martin, San Jose; John K. Kough, Morgan Hill, and Silas M. Miller, Saratoga, all of Calif., assignors to Ditz-Crane, San Francisco, Calif.

Continuation of Ser. No. 164,775, July 21, 1971, abandoned. This application May 14, 1973, Ser. No. 359,759
Int. Cl. E04d *1/26*
U.S. Cl. 52—540 **3 Claims**



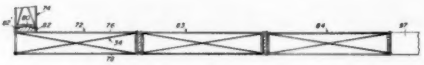
1. A panel assembly for a building exterior comprising first and second panels, each of said panels comprising a horizontally extending structural sheathing strip and facing material fixedly secured to said sheathing strip, said facing material being spaced from one end edge of said sheathing strip to form a blank space on the sheathing strip between said one end edge of the sheating strip and the corresponding edge of the facing material but extending coterminously with the other end edge of said sheathing strip, said first and second panel arranged in end-to-end overlapping relationship with said other end of said second panel sheathing strip overlying the blank space on said one end of said first panel sheathing strip so that a double thickness of structural sheathing material is formed and the facing material at the other end of said second panel sheathing is immediately adjacent the end edge of the facing material that is spaced from the said one end edge of said first panel sheathing strip.

3,844,083

A WALL MADE OF A PLURALITY OF INTERCONNECTED COLLAPSIBLE MODULES AND METHOD OF ASSEMBLY

John A. Farley, Jr., 101 E. Redwood St., Baltimore, Md. 21202

Continuation-in-part of Ser. No. 95,009, Dec. 4, 1970, abandoned. This application Jan. 31, 1973, Ser. No. 328,155
Int. Cl. E04b *1/16*; **E04g** *1/20*
U.S. Cl. 52—645 **12 Claims**



1. A building structure comprising a plurality of interconnected module assemblies, said module assemblies comprising:

I. a plurality of collapsible modules, each of said modules comprising:

a. at least two sheets of metal lath, each sheet having a top edge, a bottom edge, and first and second side edges;

b. a plurality of ring means spaced along said first and second side edges and projecting a predetermined distance therefrom, the ring means extending from said first side edge of each said sheet being intermeshible with the ring means extending from said second side edge of each corresponding sheet such that when the corresponding ring means of two of said sheets are intermeshed, the intermeshed ring means define hinge joints that project away from said sheets, at least one

sheet and the ring means projecting from each side thereof thus defining a channel means;

c. a securing rod inserted through the intermeshing ring means of each of said hinge joints; and

d. a cementous material applied to at least one channel means;

II. means for anchoring a first of said plurality of modules such that the channel means thereof are disposed in a vertical position;

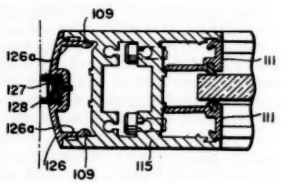
III. means for anchoring a second of said plurality modules adjacent said first module such that the cementous material in a channel of said second modules is forced against the cementous material in a coredponding channel of said first module, the corresponding channel means of said first and second modules, together with the cementous material therein, forming an integral, structural column between said first and second modules; and

IV. means for similarly anchoring the remainder of said plurality of modules so as to define an interconnected module assembly comprising alternately spaced modules and integral structural columns.

3,844,084
CONSTRUCTION ELEMENT ASSEMBLY

S. Eugene Hubbard, and Lawrence F. Biebuyck, both of Niles, Mich., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Apr. 3, 1970, Ser. No. 25,457
Int. Cl. E04c *3/04*
U.S. Cl. 52—731 **5 Claims**



1. A construction element assembly to be used in an entrance system of a building comprising:

a pair of spaced webs,

a pair of side faces interconnecting said webs to form a tubular structure, each of said side faces terminating in legs extending beyond each of the webs to form glazing pockets,

and longitudinal parts at each of the corners filleted directly into the webs and the side faces to define longitudinal screw splines,

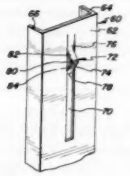
each of said longitudinal screw splines including spaced engaging flanges to form a slot therebetween in order to receive the shank of a threaded connector, said flanges having flattened top surfaces along said slot to provide a stable surface for the heads of threaded connectors driven between said flanges.

3,844,085
STUDS FOR DEMOUNTABLE PARTITION ASSEMBLY

Maurice J. Marchello, Hickory Hill, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Aug. 2, 1973, Ser. No. 384,820
Int. Cl. E04c *3/07*
U.S. Cl. 52—732 **5 Claims**

1. An elongated support member for use in a partition construction, comprising an elongated web and a flange along at least one longitudinal edge of said web, said web being formed with an opening therethrough, a locking tab having one end resiliently attached to said web adjacent said opening and extending longitudinally of said web from said one end as an otherwise unattached cantilever in registry with said opening, said tab including an intermediate locking portion projecting outwardly from the plane of one side of said web and a distal end portion terminating on the opposite side of such plane, said intermediate portion being adapted to be moved into said opening upon flexure of said resilient attachment, said intermediate portion including oppositely inclined outer

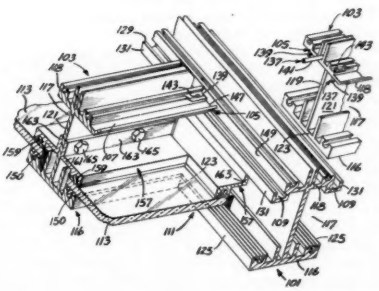


surfaces extending longitudinally of said tab and positioned to be engaged by a tool moved along said one side of said web in either direction longitudinally of said web for displacing said tab into said slot by cam action in response to such tool engagement and movement, and said support member being of a configuration permitting unobstructed access of such a tool to said locking portion from one longitudinal edge of said web along said plane of said one side.

3,844,086
METHOD OF ASSEMBLING SKYLIGHT STRUCTURES

Carl Radtke, Chicago, Ill., assignor to Paper Corporation, Kankakee, Ill.

Filed Aug. 14, 1972, Ser. No. 280,435
Int. Cl. A01g *9/14*; **EO6b** *3/54*; **EO4** *3/28*
U.S. Cl. 52—741 **5 Claims**



1. A method of assembling a skylight structure having purlins with integral condensate channels thereon joined to rafters having integral condensate channels thereon, said rafter having notches therein in a framework supporting glazing panels and providing a condensate removal system, said purlins having projecting ends thereon, said method comprising the steps of: assembling a plurality of rafters in predetermined and fixed positions relative to one another with said notches facing upwardly and at distances to be spanned within said projecting ends at which positions the rafters will remain during and after further assembling of the skylight structure, lowering the purlins directly down onto upwardly facing notches of said rafters at predetermined longitudinally spaced positions along each pair of adjacent rafters to span the same with glazing supporting portions of said purlins facing upwardly, resting curbs projecting from each end of the purlins onto upwardly facing notches of the rafters with said upwardly

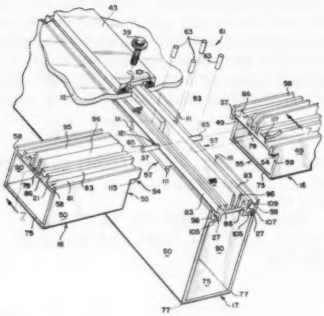
facing glazing supporting portions aligned to support a glazing panel and simultaneously forming said condensate drainage system with the ends said integral condensate channels in said purlins being superimposed over the integral condensate channels in said rafters to form said condensate removal system without adding additional separate condensate gutters therebetween, interlocking each of the purlins to its supporting rafters with condensate channels in the purlins extending into said projections and superposed over condensate channels in the rafters for discharging condensate to the latter, lowering glazing panels onto said upwardly facing portions of said rafters and purlins, and securing glazing panels in said purlin and rafter framework to fabricate said skylight structure having a condensate removal system.

3,844,087

SKYLIGHT STRUCTURE

Hans F. Schultz, Arlington Heights, and Carl Radtke, Chicago, both of Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed June 22, 1972, Ser. No. 265,164
Int. Cl. E04j *13/03*
U.S. Cl. 52—200 **6 Claims**



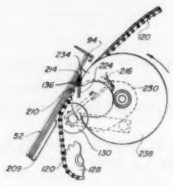
1. In a skylight structure having a set of glazing panels and a framework supporting said panels, the improvement comprising purlins in said framework extending between a pair of adjacent rafters, said purlins having an elongated structural body, a pair of glazing supports on the upper portions of said purlin bodies extending longitudinally to support first edges of adjacent pairs of said glazing panels, means integral with said purlin bodies defining a pair of purlin condensate channels each extending longitudinally along said upper portion of said purlin body and adjacent to said glazing panels for receiving and carrying condensate, elongated rafters spaced from each other and supporting said purlins and having a structural body, a pair of glazing supports on said rafters on the upper portion of said body extending longitudinally of said rafters for supporting the other edges of the glazing panels, means integral with said rafter structure body defining a pair of condensate channels extending longitudinally along the upper side of said rafter structural body for receiving condensate from said glazing panels, said purlin condensate channels having portions disposed above and discharging moisture downwardly into underlying rafter condensate channels and interconnecting means securing said purlins and rafters to each other each of said purlin and rafter comprising a closed tubular body having a hollow interior, each of said tubular bodies comprising a pair of vertically extending side walls, a bottom wall joined to lower ends of said vertical side walls, and a top wall joined to the upper ends of said vertical side walls, said glazing supports being disposed along said top wall of said purlin and inwardly and intermediate of said condensate channels and projecting upwardly of the upper edges of said purlin vertical side walls to space said glazing panels therefrom, means disposed centrally of said purlins and between said glazing supports on said top wall to secure a cap means thereto, said rafter glazing supports being disposed along said top wall of said rafter and inwardly and intermediate said rafter condensate channels and projecting upwardly of the upper edges of said rafter vertical side walls to space said glazing panels therefrom, said glazing panels being spaced upwardly of said condensate channels in said purlins and said rafters and extending thereacross and means disposed centrally along said rafters and between said glazing supports on said top wall to secure a cap means thereto.

3,844,088

PACKAGING AND BLANK HANDLING SYSTEMS

David R. McDonough, and Henry W. McDonough, both of Dundee, Ill., assignors to McDonough Manufacturing Company, Elgin, Ill.

Filed May 15, 1973, Ser. No. 360,587
Int. Cl. B65b *41/08*
U.S. Cl. 53—3 **26 Claims**



1. A flap bending mechanism for bending back flaps of prescored carton blanks, said mechanism comprising a support plate against one side of which a stack of carton blanks may rest with an edge of the plate aligned with a flap score line on said blanks so that the flaps of said carton blanks extend beyond said edge of said plate, a suction element and suction element mounting means operative to move the suction element transversely of the plane of said plate to bring the suction element into engagement with the flap of the carton blank immediately ajdacent said support plate and to move said suction element, with said flap, back to the opposite side of said plate whereby the flap becomes partially bent along its flap score line about said edge of said plate and becomes separated from the corresponding flap of the next adjacent carton blank to form an opening therebetween, and a pusher member mounted to move into said opening and to continue movement past said edge of said plate along its said opposite side thereby to complete the bending of said flap about the edge of said plate.

3,844,089

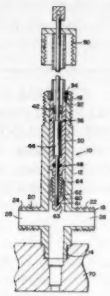
APPARATUS FOR TANK FILLING

James E. Forry, Monmouth, Oreg., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1973, Ser. No. 363,768
Int. Cl. B65b *31/02*
U.S. Cl. 53—88 **3 Claims**

1. A device for filling tanks comprising:
a tubular housing threaded externally at both ends,
an inlet port and an outlet port adjacent the end of said housing adapted to be threaded into said tank,
a sleeve slideably mounted within said housing and projecting from the outer end thereof,
means for sealing between said sleeve and said housing,
a mandrel slideably mounted within said sleeve, one end of said mandrel projecting inwardly toward said tank the other end projecting outwardly beyond said sleeve,
means for sealing between said mandrel and said sleeve,
a plug assembly releasably attached to the end of said mandrel which projects inwardly toward said tank,

wedge means slideable on said mandrel and receivable within said plug, and



means for moving said sleeve relative to said mandrel to force said wedge means into said plug.

3,844,090

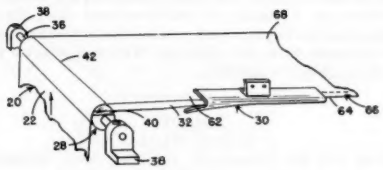
PACKAGING APPARATUS

Carl R. Pepmeier, Fredericksburg, Va., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 345,982, March 29, 1973. This application Apr. 1, 1974, Ser. No. 456,581

Int. Cl. B65b *9/12, 61/00*

U.S. Cl. 53—180 **5 Claims**



1. Apparatus for encasing a flowable product with a wrapping material including a forming member, a guide bar having a chamfered surface at one end thereof, means for delivering a continuous web of wrapping material to said guide bar at an angle such that an edge area of the web engages with the leading edge of said chamfered surface and assumes a relaxed condition as the web travels relative to said guide bar and toward said forming member, means between said forming member and bar for folding the relaxed longitudinal edge area of the web onto an area of the web which is directly adjacent thereto, means for deflecting the longitudinal edge areas of the successive portions of the advancing web about the forming member and to overlap the folded longitudinal edge area thereof onto the opposite longitudinal edge area of the web with the overlying portions of the folded edge area being exposed, means cooperating with the forming member for sealing the overlapping longitudinal edge areas through and only above a narrow width of the outermost of the overlying folded portions to provide a continuous tube having a frangible longitudinal seam, means for continuously advancing the successive portions of the tube relative to the forming member, and means for delivering a flowable material which is to be packaged through the forming member and into the successive portions of the tube concomitantly with the advancement thereof.

3,844,091

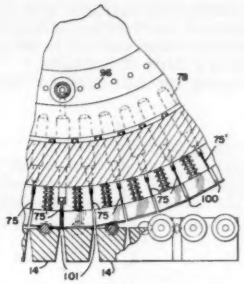
PACKAGE CUT-OUT APPARATUS

Andrew H. Vedvik, Madison, and Myron J. Merdler, Monona, both of Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.

Filed Nov. 1, 1973, Ser. No. 411,666

Int. Cl. B65b *51/30, 9/12, 61/04*

U.S. Cl. 53—182 **9 Claims**



1. In apparatus for individually packaging elongated articles in sealed parallel spaced relation between upper and lower continuous webs of sealable packaging film including an endless chain of parallel lower die blocks each having a die cavity therein for supporting said lower web and receiving the lower portion of an article to be packaged, said endless chain having an upper run on which the packaging operations are performed, means for supplying said elongated articles to said lower web, and means for sealing said upper web to said lower web, the improvement comprising: means for completely or partially severing each or selected ones of said sealed articles from an adjacent sealed article on at least one side thereof, including a support wheel; means mounting said wheel over said upper run of lower die blocks for rotation on a horizontal axis parallel to said lower die blocks and transversely to the direction of movement thereof; a plurality of upper die blocks mounted on the rim of said support wheel for sequential mating engagement with said lower die blocks; a plurality of knives mounted for sequential projection into radially aligned spaces between said lower die blocks; and, actuating means for said knives, said actuating means comprising, a plurality of air cylinders radially mounted within the rim portion of said support wheel with the outer end of the piston rod of each air cylinder being supportingly connected to one of said knives, a valve ring concentrically located on one side of said support wheel and having circumferentially spaced transverse openings therein corresponding in number and spacing to said cylinders, said support wheel having internal passageways interconnecting each of said transverse air ring openings with one of said air cylinders, and air valve means mounted to register in pressure communicating relationship with each of said transverse air ring openings as its associated air cylinder and knife registers with the space between adjacent lower die blocks thereby actuating said associated air cylinder and knife to sever or perforate the packaging film interconnecting adjacent packages along a line registering with the space between a pair of adjacent lower die blocks.

3,844,092

PACKAGING APPARATUS

Myron Scott Stringer, Siler City; Daniel W. Smith; Robert G. MacIvergan, both of Raleigh, and Robert W. Elderbaum, Cary, all of N.C., assignors to Kellwood Company, St. Louis, Mo.

Filed June 21, 1972, Ser. No. 264,916

Int. Cl. B65b *5/04*

U.S. Cl. 53—188 **22 Claims**

1. Apparatus for packaging merchandise in receptacles

made of flexible packaging material each having an open mouth, comprising:

a frame;

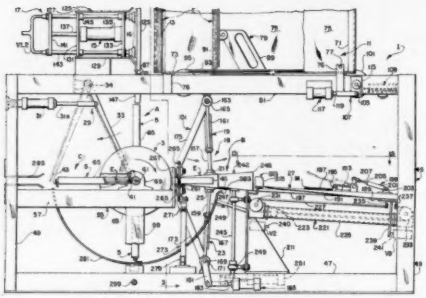
an endless conveyor carried by the frame;

a plurality of receptacle holders spaced at equal intervals on the conveyor;

means for indexing the conveyor to bring each holder from a first station at which a receptacle may be allowed to fall into the holder to a second station at which the merchandise may be loaded in the receptacle via its mouth, thence to a third station at which the loaded receptacle may be removed from the holder, and back to the first station;

means for holding a supply of receptacles;

means for removing one receptacle at a time from said



supply means and for releasing it to fall into a holder at said first station;

means at the second station carried by said frame for opening the mouth of the receptacle carried by the holder at the second station for entry of said merchandise therein, said opening means being movable between a retracted position clear of said conveyor for permitting indexing of the conveyor and an operating position in which said opening means is engageable with the receptacle held by the holder at the second station for opening the receptacle;

means at the second station for inserting the merchandise in the opened receptacle; and

means at the third station for removing the loaded receptacle from its holder.

3,844,093

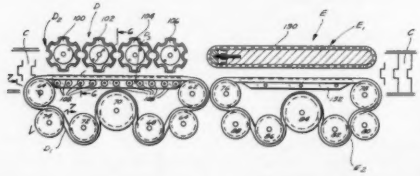
APPARATUS FOR DECAPPING BOTTLES

Carl P. Cato, Lynchburg, Va., assignor to Dacam Corporation, Madison Heights, Va.

Filed Apr. 26, 1973, Ser. No. 354,486

Int. Cl. B65d *43/40*

U.S. Cl. 53—381 A **26 Claims**



1. Apparatus for removing twist-type caps from bottles comprising means for conveying the bottles at a given speed, cap loosening means and cap removal means located one after the other in the direction of conveyance of the bottles, said cap loosening means and cap removal means each operably engaging each cap as the bottles are conveyed by said conveyor means such that the caps are acted upon by said cap loosening means to provide an initial rotation of each cap, said initial cap rotation being insufficient to permit removal of the cap from the bottle and further acted upon to remove the cap from the bottle by said cap removal means.

3,844,094

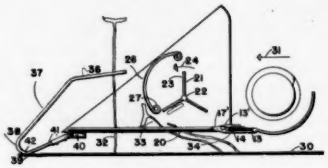
SUNFLOWER GATHERER FOR COMBINE HARVESTERS AND THE LIKE

George J. Janzen, Box 164, Winkler, Manitoba, Canada

Filed May 14, 1973, Ser. No. 359,775

Int. Cl. A01d *45/30*

U.S. Cl. 56—126 **12 Claims**



1. A sunflower gatherer for combine harvesters which include a knife assembly transversely across the front thereof; said knife assembly including forwardly projecting fingers, said gatherer comprising in combination a plurality of spaced and parallel forwardly extending parting members secured to the front of said combine, each parting member in cross section defining a substantially U-shaped trough, a rotatable multi-lobed gathering component spanning adjacent the inner ends of said members and being spaced slightly above said members and a plurality of bristles secured along the side edges of said parting members, said bristles inclining upwardly and outwardly from said sides, said bristles of adjacent sides barely touching one another.

3,844,095

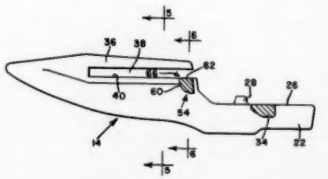
MOWER GUARD

Wilfred Lee Roy Steuerwald, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 25, 1973, Ser. No. 363,893

Int. Cl. A01d *55/10*

U.S. Cl. 56—310 **2 Claims**



1. In a mower having an elongated generally horizontal support member, and an elongated longitudinally reciprocating sickle bar assembly including a plurality of sickle sections with angled, forwardly converging ccutting edges, each cutting edge intersecting with a cutting edge on the adjacent section at a rearward vertex, the combination therewith of a plurality of improved mower guards mounted on and extending forwardly from the support member and having cutting edges registering with the cutting edges of the sickle sections as the sickle bar reciprocates, each mower guard being made of forged steel and comprising: at least one fore-and-aft guard

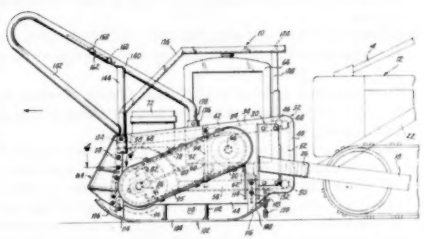
element having a tapered front portion, opposite lateral sides, and a rearward heel portion, attachable to the support member; a transversely extending trash bar means including portions extending laterally outwardly from opposite sides of each guard element; and a generally horizontal machined cutting surface extending across an upper central portion of each mower guard element and at least part of the trash bar portions adjacent the opposite side of the guard element and forming generally fore-and-aft cutting edges at the intersection of the cutting surface with the mower guard sides and generally transverse cutting edges extending outwardly from the rearward ends of the side cutting edges at the intersection of the cutting surface with the forward side of the trash bar portions, the sickle sections being mounted for reciprocation on the cutting surface with the rearward vertex between the cutting edges of two adjacent sickle disposed rearwardly of the cutting edges so that the sickle section cutting edges register with the guard element cutting edges as the sickle bar reciprocates, the mower guard having a forging parting plane forming parting lines at the intersection with the outer surfaces of the guard and having a generally horizontal portion disposed closely above the cutting surface, so that the portion of the parting lines above the cutting surface is removed when the cutting surface is machined, and a downwardly, and rearwardly inclined portion extending downwardly through the top of the trash bar, so that the parting lines on the machined areas on the top of the trash bar are also removed, whereby the parting lines do not intersect the cutting edges.

3,844,096

BRUSH AND TREE MASTICATOR

Thomas J. Dunn, P.O. Box 110, Hackettstown, N.J. 07840

Filed Aug. 16, 1973, Ser. No. 388,808
Int. Cl. A01d *49/00*
U.S. Cl. 56—504 **9 Claims**



1. In a self-contained brush and tree shredding unit for attachment to a prime mover, the unit including a rotatable main axle, a plurality of spaced, coaxial disc members fixed to said axle, a series of shafts extending through the disc members at circumferentially spaced positions near the disc peripheries, a plurality of knives loosely mounted on said shafts between discs, and the knives being loosely mounted on the shafts for movement in flail fashion upon rotation of the main axle, the improvements comprising:

a housing comprising side plates and means extending between and connecting the side plates;

means projecting from the side plates to secure the unit to the prime mover, said means providing for adjustable height mounting of the unit relative to the prime mover; said main axle extending between the side plates;

an engine on the housing, and a protective shroud about the engine;

means drivingly connecting the engine to said main axle to impart rotation to the main axle;

said main axle carrying the disc members and supporting the shafts to carry the knives in an arc of rotation of a maximum depth within the limit of extent of the side plates;

a skid assembly for each side plate, each skid assembly comprising an upright, a ski member having upturned, curvilinear end sections, and a pair of mounting brackets; means adjustably connecting the mounting brackets to the side plates;

a gathering arm for each side plate, the gathering arms each comprising a substantially vertical brace, an elongated outwardly angled top member fixed to the housing at a proximal end thereof, and a bottom member extending forwardly and outwardly from the brace and integral at its distal end with the distal end of the top member; and

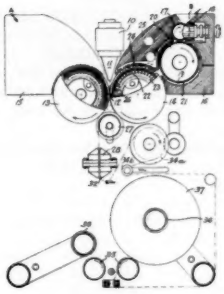
a deflector plate at the leading end of each side plate below said arm to prevent entry of material between the side plate and the adjacent disc members.

3,844,097

COMPOSITE SPINNING

Emilian Bobkowicz, and Andrew John Bobkowicz, both of 1435 St. Alexander St., Rm. 310, Montreal, Quebec, Canada

Filed Nov. 29, 1971, Ser. No. 202,860
Claims priority, application Canada, Aug. 26, 1971, 121459
Int. Cl. D02g *1/02*
U.S. Cl. 57—34 HS **35 Claims**



1. Apparatus for the manufacture of composite spun yarn comprising a pair of rotatable rollers in face to face relation thereby providing a nip therebetween and comprising means for supplying a polymer substrate downwardly into the nip of the pair of rotatable rollers, means for rotating said rollers against each other, means for continuously supplying fibrous material at least onto one of said rollers, and means for transforming the polymer substrate and the fibrous material in contact with each other into spun yarn, characterized in that said means for supplying the polymer substrate comprise at least one die and nozzle arrangement adapted to project the polymer substrate towards the nip of said rotatable rollers in the form of a tubulus, spray or bubble.

3,844,098

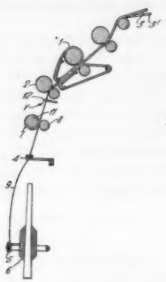
APPARATUS AND METHOD FOR THE MANUFACTURE OF TWISTED AND PLIED YARN

Dieter Erich Alexander Plate, Torquay, Victoria, and John Desmond Feehan, Newton, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Apr. 6, 1973, Ser. No. 348,818
Claims priority, application Australia, Apr. 12, 1972, 8583/72
Int. Cl. D01h *13/08;* **D02g** *3/26, 3/28*
U.S. Cl. 57—34 AT **15 Claims**

1. A process for producing a yarn, comprising at least two strands plied together, and wherein there is twist in each individual strand, which process comprises the steps of separately feeding each strand from a feeding point, converging

the strands at a convergence point, twisting the strands together, and intermittently blocking the twist at a position



between the convergence point of the strands and the point of application of the twist.

3,844,099

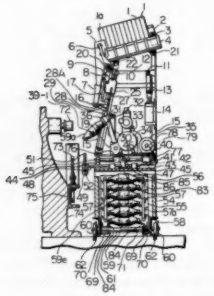
METHOD AND APPARATUS FOR DOFFING FULL BOBBINS ON TEXTILE MACHINES SUCH AS DRAW-TWISTER

Yoshio Tsuchiyama, Kyoto; Toshihiko Oka, Moriyama; Jun Takai, Otsu; Katsuhiro Fukuda, and Akio Ando, both of Okazaki, all of Japan, assignors to Toray Industries Inc., Tokyo, Japan

Filed Sept. 13, 1972, Ser. No. 288,878

Int. Cl. D01h *9/10*

U.S. Cl. 57—53 **10 Claims**



1. Method for doffing full bobbins on an apparatus which travels along the rows of spindles of drawtwisters and is provided with a doffing mechanism, a bobbin transferrer, a bobbin storing mechanism and an empty bobbin feeding mechanism comprising, in the following operational sequence: advancing said doffing mechanism from its stand-by position towards the row of full bobbins resting on said spindles; extracting said multiple full bobbins simultaneously off from said spindles by said doffing mechanism; withdrawing said doffing mechanism with said full bobbins from said row of spindles; transferring said full bobbins carried by said doffing mechanism onto poles of said bobbin transferrer whereby said full bobbins are supported by insertion of the respective poles into an axial hollow of each bobbin wherein said full bobbins are at first received by said poles in a substantially upright disposition and said poles are then tilted so as to hold said bobbins in a substantially horizontal disposition and; transferring said full bobbins from said poles to said bobbin storing chamber all without the physical contact of the mechanisms with the filament yarn of said full bobbins.

3,844,100

APPARATUS FOR THE OPEN-END SPINNING OF TEXTILE YARNS

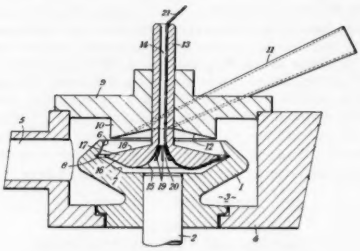
Fred Croasdale, Whalley, and Michael John English, Helmshore, both of England, assignors to Platt International Limited, Oldham, England

Filed Oct. 18, 1972, Ser. No. 298,544

Claims priority, application Great Britain, Oct. 19, 1971, 48542/71

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 **14 Claims**



1. Open-end spinning apparatus comprising:

a spinning rotor having an open end and an inner surface which is concentric with respect to the rotary axis of the rotor and which has two portions coverging toward a region of maximum diameter to form a fiber collecting surface,

a closure member for closing the open end of the rotor and having a closure surface in the region of the open end of the spinning rotor,

a fiber feed duct passing through said closure member for feeding fibers in discrete form to said rotor and having an exit opening in said closure surface, and

a yarn delivery tube passing through said closure member, extending from a yarn outlet end through the open end of the rotor and across a plane in which lie the points of maximum diameter of the fiber collecting surface and terminating at a yarn inlet end within the spinning rotor, said yarn delivery tube having a flange portion provided at said yarn inlet end, said flange portion having a front guide surface which extends outwardly and back toward the fiber collecting surface to guide fibers being spun into yarn while being withdrawn from the fiber collecting surface and a rear surface opposite said front guide surface and confronting said closure surface and said fiber feed duct exit opening.

3,844,101

THREAD MONITOR DEVICE FOR TEXTILE MACHINERY

Hermann Schwartz, Pfaffikon, Switzerland, assignor to Siegfried Peyer, Bach, Switzerland

Filed Sept. 6, 1973, Ser. No. 394,936

Claims priority, application Switzerland, Oct. 11, 1972, 14843/72

Int. Cl. D01h *13/16*

U.S. Cl. 57—81 **10 Claims**

1. Thread monitor-device, particularly for thread handling apparatus in which the thread forms a ballon comprising

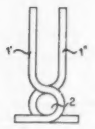
two hook-shaped thread guides (1′, 1″) of electrically conductive material, having their hooks located to be

spaced from each other, in the direction of thread travel electrically insulated from each other to form, electrically two electrodes, said guides forming mechanically, in the projection of thread travel, a thread guide eye (2);

a source of electrical energy (V);

high impedance means (R1, R2) connecting the respective thread guide-electrodes (1′, 1″) to said source;

a differential amplifier (3);



and means (C1, C2) coupling the thread guide-electrodes (1′, 1″) to a respective input, each, of the differential amplifier, said differential amplifier providing an output signal representative of motion of thread through the thread guide eye (2) formed by said thread guide-electrodes (1′, 1″).

3,844,102

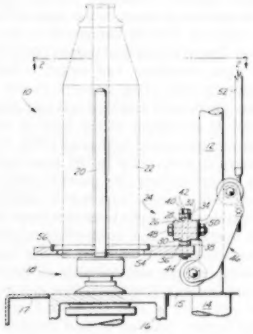
SPINNING AND TWISTER RING LEVELING APPARATUS

Frank E. Brooks, Seneca, S.C., assignor to Saco-Lowell Corporation, Greenville, S.C.

Filed Sept. 10, 1973, Ser. No. 395,798

Int. Cl. D01h 7/64

U.S. Cl. 57—122 **6 Claims**



1. In a textile yarn processing machine having a spindle assembly mounted thereon for the winding of yarn about a vertical axis, a vertically reciprocatory ring rail and a ring holder, ring assembly supported by said ring rail for movement therewith concentric to said axis, the improvement comprising:

a ring rail having upper and lower convex arcuate surfaces in the area of said support;

upper and lower adjusting members respectively having lower and upper concave surfaces of complementary arcuity to said arcuate surfaces of said ring rail and upper and lower planar surfaces; and

joining and fixing means for adjustably joining said adjusting members to said ring rail at a desired position about the longitudinal axis of said rail, for fixing said members thereat, and for joining and fixing said ring holder to said members therat.

3,844,103

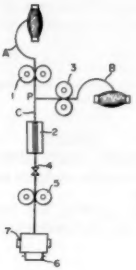
PROCESS FOR PRODUCTION OF COMPOSITE BULK YARN

Yoshiyuki Sasaki, Takatsuki, and Masayuki Tani, Ibaragi, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 29, 1973, Ser. No. 364,421

Int. Cl. D02g 1/02, 3/36

U.S. Cl. 57—157 TS **5 Claims**



1. In a process for the production of a composite bulk yarn comprising heat setting a thermoplastic multifilament core yarn A and a thermoplastic multifilament sheath yarn B while the sheath yarn B is being wrapped around the core yarn A under false twisting and detwisting and winding both yarns A and B without separating them, the improvement comprising using essential factors for the production of the composite bulk yarn by selecting proper values of Tn and R from the scope of the Tn and R calculated by the empirical formulas

$$2.4 \times 10^4/(D_A + D_B) < Tn < 4.2 \times 10^4/(D_A + D_B) \quad (1)$$

$$0.3/7\,(k - 1.2)^2 < R < 0.7/6\,(k - 1.2)^2 + 0.1 \quad (2)$$

wherein Tn denotes the number of false twist of the core yarn, D_A the denier of the core yarn A, D_B the denier of the sheath yarn B, R the overfeed percent of the sheath yarn B, and K is a constant of 2.4 to 4.2, thus standardizing the composite bulk yarn having the sheath yarn B in alternate twist-like condition.

3,844,104

ELECTROMECHANICAL TRANSDUCER FOR WATCHES

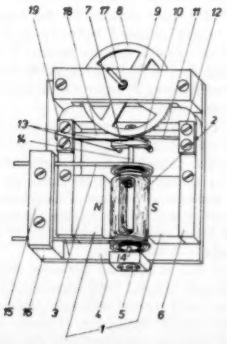
Walter Schlicht, Freiburg, Germany, assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 9, 1973, Ser. No. 349,333

Claims Priority, Application Germany, Apr. 8, 1972, P 22 16 992

Int. Cl. G04c 3/00, 3/04

U.S. Cl. 58—23 D **9 Claims**



1. An electromechanical stepping device comprising a magnetic yoke having a pair of opposite facing poles, a movable

air core coil rotatably supported between said poles on a shaft having a longitudinal axis between and parallel to the opposite faces of said poles, a pair of reset springs secured at opposite ends of said shaft and connected to said coil to apply current thereto, both said springs being rotatable with said coil and shaft and returning said coil to a reset position, a toothed gear mounted on a central axis, said gear axis being aligned with and perpendicular to said coil shaft axis, and a first pawl mounted at one end of said shaft to rotatably engage separate successive teeth of said gear upon each return movement of said coil after application of a current pulse to rotate said coil, said gear being stepped by one tooth during each return movement of said coil.

3,844,105

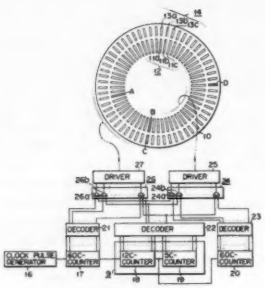
TIME INDICATION APPARATUS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1974, Ser. No. 448,515

Int. Cl. G04b 19/00

U.S. Cl. 58—23 R **10 Claims**



1. A time indication apparatus comprising:

a clock pulse generator;

time counting means controlled by outputs from said clock pulse generator to generate an output for each minute and an output for each hour, respectively;

a display panel;

a first indication section including a plurality of first indication elements arranged at intervals on a loop line on said display panel and in directions radially extending from the center of a space defined by the loop line;

first driver means coupled between said time counting means and said first indication section for driving at least one selected first indication element for effecting hour indication responsive to receipt of hour outputs from said time counting means;

a second indication section including a plurality of second indication elements arranged on lines extending in the identical radial directions as said first indication elements extend, said second indication elements being arranged about the peripheral portion of said first indication section, respective second indication elements corresponding to and being associated with each of said plurality of first indication elements; and

second driver means coupled between said time counting means and said second indication section for driving at least one selected second indication element, said at least one driven second indication element together with a driven first element cooperatively effecting minute indication responsive to receipt of minute outputs from said time counting means.

3,844,106

ELECTRONIC DEVICE FOR MAINTENANCE OF THE OSCILLATIONS OF A BALANCE WHEEL

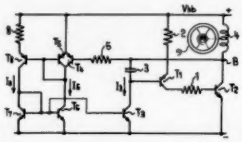
Igor Scherrer, Colombier, Switzerland, assignor to Ebauches S.A., Neuchatel, Nevenburg, Switzerland

Filed Mar. 28, 1973, Ser. No. 345,687

Claims priority, application Switzerland, Mar. 28, 1972, 4569/72

Int. Cl. G04b 17/00

U.S. Cl. 58—28 **3 Claims**



1. An electronic device for maintenance of the oscillations of a balance wheel of a timepiece, comprising: a multivibrator including an input transistor and an output transistor, the base of said input transistor and the collector of said output transistor being connected by a capacitor, said multivibrator producing pulses at the collector of said output transistor; a source of operating potential; a coil connected between said potential source and the collector of said output transistor and electromechanically coupled to the balance wheel, said coil receiving applied pulses from said output transistor of said multivibrator for maintaining the periodic oscillations of the balance wheel; and negative feedback means connected at its input to the junction of said coil and the collector of said output transistor and providing an output control signal to the base of said input transistor, said negative feedback means comprising controlled current generator means in the form of a transistor, the collector of which is directly connected to the base of said input transistor for supplying said output control signal to said base of said input transistor, said negative feedback means further comprising controlling network means connected at an input to the junction of said coil and said output transistor and connected at an output to the base of said controlled current generator transistor, said controlling network means being responsive to a decrease in the potential appearing at said junction for controlling said current generator means to provide a decreased amount of current to said input transistor thereby preventing said output transistor from becoming saturated during operation, said controlling network means including at least one active element in the form of another transistor having its base and collector electrodes connected together to function as a diode, said base electrode connected to said base electrode of said controlled current generator transistor and further coupled to said input of said negative feedback means.

3,844,107

TIMEPIECE

Charles Guyot, Tavannes, Switzerland, assignor to Ebauches S.A., Neuchatel, Canton of Neuchatel, Switzerland

Filed July 23, 1973, Ser. No. 381,683

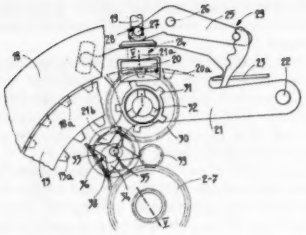
Claims priority, application Switzerland, July 24, 1972, 11029/72

Int. Cl. G04b 19/22, 27/02, 27/00

U.S. Cl. 58—42.5 **7 Claims**

1. Timepiece comprising a frictionally driven hour indicator and a minute indicator, control means for moving the hour indicator independently of the minute indicator, the control means including a control mechanism with a control stem movable between at least a first axial position for setting the timepiece by moving the hour and minute indicators and a second axial position for setting only the hour indicator, said control means including a sliding wheel for correction of the

hour indicator, the sliding wheel being submitted to the action of the control stem and movable between a work position for operating said hour indicator and a rest position in which the



sliding wheel is inoperative, the control mechanism including a lever operated by a trigger-piece and the lever is operable on said sliding wheel for maintaining the same in its rest position when the stem occupies its first position.

3,844,108

MECHANICAL WATCH MOVEMENT

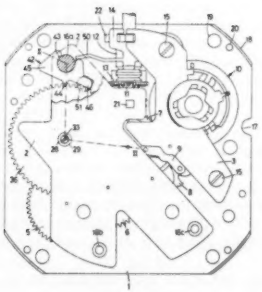
Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach (Canton of Soleure), Switzerland

Filed Apr. 30, 1974, Ser. No. 465,664

Claims priority, application Switzerland, May 11, 1973, 6729/73

Int. Cl. G04b *33/00*

U.S. Cl. 58—59 **8 Claims**



1. A mechanical watch movement comprising a mainspring fitted in a barrel-drum rotating around a barrel-arbor, an inner member to which the mainspring is hooked, a ratchet-wheel integral in rotation with the inner member, a base-plate and a bridge supporting the two ends of the barrel-arbor, several pillars connecting the base-plate to the bridge and fixing them with respect to one another, a click for retaining the ratchet-wheel, and a resilient element acting upon the click, wherein the ratchet-wheel extends between the bridge and the barrel-drum, the click is a blanked flat plate having an arcuate indentation in one of its edges, the said indentation is engaged on a cylindrical bearing surface of one of the pillars at the level of the ratchet-wheel, and the said resilient element is an arm blanked in a plate integral with the frame of the movement.

3,844,109

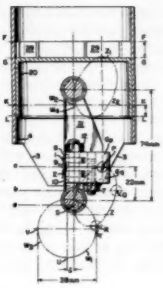
BRAYTON ENGINES

Willem Cornelis Roos, 318 Rena Dr., Lafayette, La. 70501

Filed Feb. 14, 1973, Ser. No. 332,317

Int. Cl. F01l *3/00*; **F02c** *5/00*

U.S. Cl. 60—39.6 **3 Claims**



1. A combustion engine including a cylinder, a crank shaft, a connecting rod journaled on to said crank shaft, a piston attached to said connecting rod and reciprocating by means of said crank shaft and said connecting rod within said cylinder, and a cylindrical sleeve valve having inlet and outlet ports, said sleeve valve being mounted concentric with respect to both said piston and said cylinder, and a connecting link for actuation of said sleeve valve with both a rotative and a reciprocative motion, said connecting link having one end connected to said sleeve valve and another end connected to said connecting rod.

3,844,110

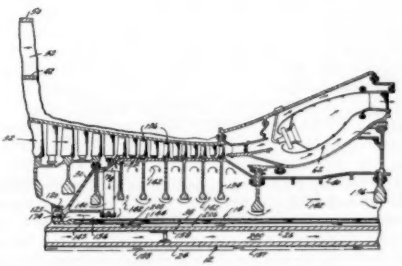
GAS TURBINE ENGINE INTERNAL LUBRICANT SUMP VENTING AND PRESSURIZATION SYSTEM

William Widlansky, and Bernard L. Koff, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 26, 1973, Ser. No. 335,706

Int. Cl. F02c *7/06*

U.S. Cl. 60—39.08 **10 Claims**



1. In a gas turbine engine of the type including at least first and second compressor portions and first and second turbine portions; at least two concentric, hollow shaft assemblies operatively connecting certain of said compressor portions to certain of said turbine portions; a plurality of bearing assemblies adapted to rotatably support said shaft assemblies; casing means enclosing portions of said compressors and said turbines, said casing means adapted to define, at least in part, a generally annular motive flow passage therethrough having an

inlet upstream of at least one of said compressor portions and an outlet downstream of at least one of said turbine portions; said casing means further defining, in cooperation with at least one of said shaft assemblies, a first bearing chamber and at least a second axially spaced bearing chamber, said bearing chambers adapted to enclose said bearing assemblies and receive a lubricating fluid; a plurality of seal pressurization chambers, at least one of which is associated with each said bearing chamber; means for delivering air into said seal pressurization chambers; means for venting said bearing chambers to establish a continuous flow of air through said bearing chambers; and means for scavenging said lubricating fluid from said bearing chambers; the improvement comprising:

said air delivery means and said scavenge means for at least a first of said bearing chambers being formed internally of at least one of said shaft assemblies such that the air delivery and scavenge functions may be accomplished for said first bearing chamber without the necessity of piping extending across said annular motive flow passage or piping mounted externally of said engine; and wherein said air delivery means comprise a bleed port located intermediate of one of said compressor portions, a bleed chamber formed internally of said compressor portion, and

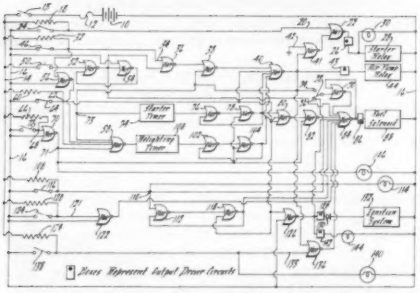
at least two flow paths extending from said bleed chamber, the first said flow path comprising a seal pressurization flow path and the second said flow path comprising a compressor coolant flow path.

3,844,111

SOLID STATE STARTING AND OPERATING SYSTEM FOR A CONSTANT COMBUSTION ENGINE

James E. Fenton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 20, 1972, Ser. No. 316,946
Int. Cl. F02c 7/26
U.S. Cl. 60—39.14 **5 Claims**



1. A starting and operating system for a constant combustion engine having a starter motor and a driver circuit for said starter motor, having means for discharging fuel into a combustion chamber of said engine and a driver circuit for said fuel discharge means, and having an ignition system for igniting fuel discharged into said combustion chamber and a driver circuit for said ignition system, said constant combustion engine starting and operating system comprising, in combination:

an engine starting switch;

means for indicating combustion in said combustion chamber;

means for sensing whether the speed of said engine is above or below a first predetermined level;

means for sensing whether the speed of said engine is above or below a second predetermined level;

NOR gate logic circuit means for energizing said starter motor driver circuit, said fuel discharge means driver circuit, and said ignition system driver circuit when said starting switch is actuated and the speed of said engine is below said first predetermined level;

NOR gate logic circuit means for de-energizing said starter motor driver circuit and said ignition system driver circuit when the speed of said engine exceeds said second predetermined level;

NOR gate logic circuit means for de-energizing said starter motor driver circuit, said fuel discharge means driver circuit and said ignition system driver circuit if said combustion indicating means does not indicate combustion at the end of a predetermined time interval initiated by actuation of said starting switch; and

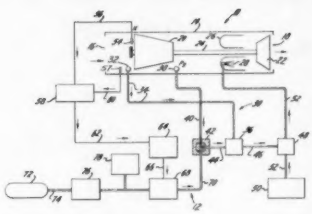
NOR gate logic circuit means for de-energizing said fuel discharge means driver circuit if said combustion indicating means does not indicate combustion when the speed of said engine exceeds said second predetermined level.

3,844,112

GAS TURBINE START-UP FUEL CONTROL SYSTEM

Emmett S. Harrison, Corona, N.Y., assignor to Curtiss-Wright Corporation, Woodridge, N.J.

Filed June 27, 1973, Ser. No. 373,964
Int. Cl. F02c 7/26
U.S. Cl. 60—39.14 **5 Claims**



1. A gas turbine engine start-up fuel control system for controlling fuel flow to a turbine engine having an air compressor assembly so as to effect engine acceleration at a preselected rate to the idling state of engine operation, the system comprises:

a. a biasing and signal generating means for generating a signal which is a function of compressor discharge pressure biased by ambient air inlet temperature;

b. means for sensing ambient air inlet temperature connected to the biasing and signal generating means to transmit a signal representative of the ambient air inlet temperature to said biasing and signal generating means;

c. simulating means for simulating the compressor discharge pressure of the gas turbine engine and conducting a simulated pressure signal to said biasing and signal generating means; and

d. fuel control valve means;

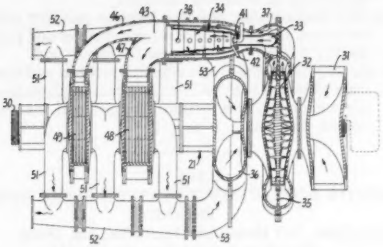
e. said biasing and signal generating means being connected to a fuel flow control valve to effect adjustment of the fuel control valve;

f. said simulating means, including a characterizer, for providing simulated pressure signals which are a function of compressor assembly angular velocity biased by ambient temperature and at predetermined sequential increments.

3,844,113
FRICTION IMPULSE GAS TURBINE

Hanford N. Lockwood, Jr., 801 Humboldt St., Apt. 211, San Mateo, Calif. 94401

Filed Nov. 2, 1972, Ser. No. 303,116
Int. Cl. F02c 7/02
U.S. Cl. 60—39.15 7 Claims



1. A turbine means, comprising: a casing means having an air inlet and an air outlet therein, an elongate rotatable shaft means supported within the casing means and extending axially thereof, first compressor blade means fixed on the shaft means in the casing means for rotation with the shaft means to draw air inwardly through the inlet and force it outwardly through the outlet, fuel combustion means adjacent the casing means, said fuel combustion means including an inner combustion chamber surrounded by an exhaust gas mixing chamber to mix exhaust gas with the main flame in the combustion chamber, and an outer chamber for circulating exhaust gas over the exhaust gas mixing chamber to control the temperature of the gas delivered to the turbine means, a first passage means extending from the outlet to the fuel combustion means for delivering air from the first compressor blade means to the fuel combustion means, a compressor drive turbine means fixed on the shaft means, an output drive turbine means fixed on the shaft means, separate passage means extending in parallel from the fuel combustion means to each of the compressor and output drive turbine means for separately delivering exhaust gases from the fuel combustion means to each of the turbine means, a common exhaust gas manifold adjacent the casing means for each of the turbine means, separate exhaust passage means leading from each of the turbine means to the exhaust manifold means to deliver exhaust gases from the turbine means to the exhaust manifold means, second passage means connected between the exhaust manifold means and the casing means to deliver a portion of the exhaust gases from the exhaust manifold means to the casing means, a second compressor blade means fixed on the shaft means adjacent the first compressor blade means for receiving said portion of the exhaust gases from the exhaust manifold means to compress the exhaust gases, and third passage means leading from the second compressor blade means to the fuel combustion means for delivering the compressed exhaust gases to the fuel combustion means to increase the efficiency of the turbine and reduce the pollution effect.

3,844,114
GAS TURBINE TEMPERATURE REGULATING CIRCUIT

Wolfgang Nonnenmann, Pforzheim; Bert Wurst, Moglingen; Wolfgang Misch, Stuttgart, and Edgar Schonart, Lippstadt, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Feb. 1, 1973, Ser. No. 328,710
Claims priority, application Germany, Feb. 21, 1972, 2208040
Int. Cl. F02c 3/10
U.S. Cl. 60—39.16 R 22 Claims

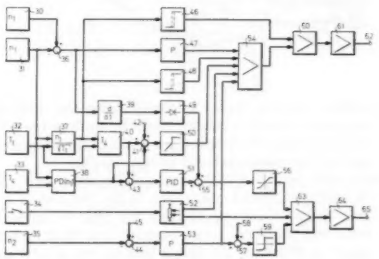
1. A regulating circuit for controlling the operating temperature of a gas turbine engine having a variable gate mechanism between a compressor turbine and a drive turbine, comprising:

means for producing voltages representative, respectively, of the magnitudes of desired engine speed (30), compressor turbine speed (31), compressor input temperature (32), operating temperature (33) and drive turbine speed (35);

comparison means (36) for producing a voltage representative of the difference between said desired engine speed and said compressor turbine speed in response to said voltages respectively representative of said last-mentioned speeds;

differentiator means (39) responsive to said voltage produced by said comparison means (36) for producing a voltage representative of the rate of increase of the voltage produced by said comparison means (36), said differentiator means having rectifying means (49) interposed in its output for suppressing signals resulting from lag in desired deceleration of said compressor turbine;

a first multi-input minimum input selector (54) arranged to



be responsive to said voltage representative of the difference between desired engine speed and compressor turbine speed, to a voltage representative of a magnitude which is a function of both compressor input temperature and said compressor turbine speed and a voltage representative of a magnitude which is a function of operating temperature, the output of said first minimum input selector being arranged to control the rate of fuel supply, and a second multi-input minimum input selector (63) arranged to be responsive to voltages respectively primarily representative of drive turbine speed and operating temperature and further responsive to the output of said differentiator means (39) as a voltage additive to a voltage representative primarily of operating temperature, said second multi-input minimum input selector (63) being arranged to control said variable gate mechanism and being adapted, by virtue of its aforesaid responsiveness to said differentiator means output, to exert an anticipatory character of control on said variable gate mechanism during acceleration.

3,844,115
LOAD DISTRIBUTING THRUST MOUNT

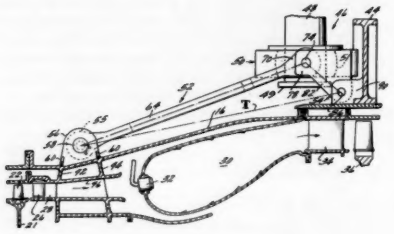
Wilbert Bernard Freid, Swampscott, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Feb. 14, 1973, Ser. No. 332,435
Int. Cl. F02c 7/20; B64d 27/16
U.S. Cl. 60—39.31 8 Claims

1. A load distributing thrust mount arrangement for imparting the propulsive thrust of a gas turbine engine to a vehicle comprises:

a dowel extending outwardly from the vehicle in general orthogonal alignment to the axis of the gas turbine engine,

a collar in slidable engagement with the rod and spaced apart relation to the outer casing of the engine;
a rigid thrust member between the collar and engine casing in rotatably pinned connection to the engine casing;
a mount roll ring around the engine in axially spaced relation to the pinned connection between the thrust member and engine casing for insuring rigidity in the area of the engine casing adjacent the roll ring;
a hanging mount interconnecting the vehicle and roll ring for sustaining a portion of the weight of the gas turbine engine relative to the vehicle;



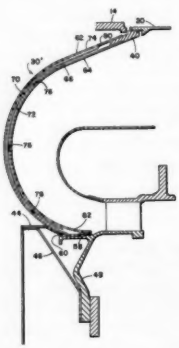
a second hanging mount interconnecting the vehicle and engine at a location spaced axially apart from the roll ring for sustaining the remaining portion of the weight of the gas turbine engine relative to the vehicle;
and a rigid thrust link between the collar and mount roll ring in rotatably pinned connection to the roll ring at a location spaced axially apart from the rigid thrust member such that the rigid thrust member and rigid thrust link coact to distribute the thrust load to two axially spaced apart locations on the engine casing thereby reducing the maximum engine bending moment.

3,844,116

DUCT WALL AND REVERSE FLOW COMBUSTOR INCORPORATING SAME

Lawrence R. Matto, Huntington, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Sept. 6, 1972, Ser. No. 286,720
Int. Cl. F02c *3/04, 7/18, 7/20*
U.S. Cl. 60—39.32 **6 Claims**



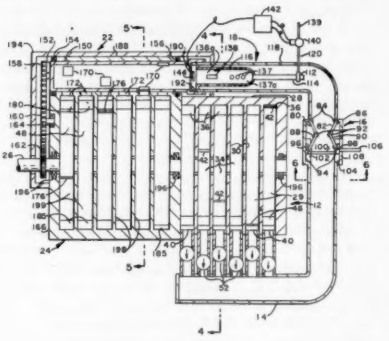
1. In a gas turbine engine a duct wall for defining, at least in part, the flow path of a hot gas stream generated by a combustor, said duct wall comprising:
first and second plates, said plates being spaced apart to thereby define a relatively thin chamber therebetween, said first plate being adapted for direct exposure to the hot gas stream from said combustor;
means for introducing cooling air into one end of said chamber means, flowing the cooling air through said chamber means and over substantially the entire surface area of said first plate, said plates including passages extending from said chamber to the hot gas stream for discharging the cooling air from said chamber;
an intermediate plate provided between said first and second plates and in spaced relation to both of said plates to thereby define first and second chambers; and
a plurality of spacing means effective between said intermediate plate and both said first and second plates to maintain a minimum flow path area through both the first and second chambers.

3,844,117

POSITIVE DISPLACEMENT BRAYTON CYCLE ROTARY ENGINE

Ted L. Ryan, 703 Jordan Ln., Huntsville, Ala. 35805

Filed Aug. 4, 1972, Ser. No. 278,017
Int. Cl. F02c *5/02*
U.S. Cl. 60—39.61 **8 Claims**



1. A rotary engine comprising:
air compression means adapted to provide a substantially continuous flow of compressed air;
fuel mixing means responsive to the output of said compression means for mixing fuel with air and providing a fuel-air vapor;
combustion chamber for receiving said fuel-air vapor under pressure from said mixing means and burning the fuel-air vapor mixture;
positive displacement, sequentially operable, multi-stage rotary expander
valve means for receiving an expanding gas output of said combustion chamber and sequentially directing flow of said gas into each of the several stages of said multi-stage expander; and
drive means responsive to a rotary output of said rotary expander for driving said compression means and providing rotary shaft output power.

3,844,118

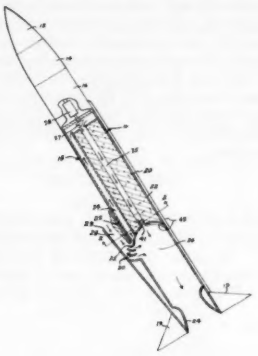
AFT INLET RAMJET POWERED MISSILE

David B. Wilkinson, New Carlisle, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1973, Ser. No. 392,380
Int. Cl. F02k *7/10*
U.S. Cl. 60—251 **2 Claims**

1. In a solid fuel ramjet powered missile, having a pay-load section and a ramjet section including a fuel grain with an air

passage therethrough and means for igniting the fuel grain; a secondary combustor positioned at the aft end of the fuel grain; apparatus for supplying air to said fuel grain and said secondary combustor comprising; an air inlet having its lip positioned near the aft end of said fuel grain; means within



said inlet for directing a major portion of the air, entering the inlet, into the secondary combustor; a channel adjacent the fuel grain, extending from said inlet to a position adjacent the forward end of the fuel grain, for providing primary air to the forward end of the fuel grain.

3,844,119

CONTROL DEVICE FOR A CLEANING INSTALLATION INSERTED INTO THE EXHAUST GAS SYSTEM

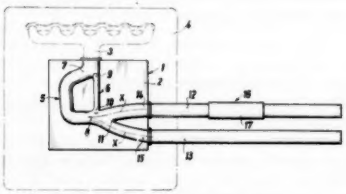
Bernd Herrbrich, Stuttgart-Stammheim, Germany, assignor to Dr. Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed July 27, 1972, Ser. No. 275,625

Claims priority, application Germany, July 30, 1971, 2138338

Int. Cl. F01n *3/14*

U.S. Cl. 60—288 **12 Claims**



1. A control system for a cleaning installation interconnected in an exhaust gas system of an internal combustion engine including an exhaust gas manifold, a pair of exhaust gas lines operably connected to said exhaust gas manifold, and a catalyst means connected to one of said pair of exhaust gas lines, the control system being operable to absorb the harmful substances of the exhaust gases by controlling the throughflow of the exhaust gases through the cleaning installation as a function of the operating condition of the internal combustion engine, characterized in that the control system includes a flow-controlled exhaust gas conduction means connected between the exhaust gas manifold and the pair of exhaust gas lines, said exhaust gas conduction means including a first and second exhaust gas channel means connected to the exhaust gas manifold for directing the flow of exhaust gases from the exhaust manifold to the pair of exhaust gas lines, said first exhaust gas channel means being provided with an inlet and discharge opening lying in the flow direction of the exhaust gases flowing out of the exhaust gas manifold, said second exhaust gas channel means being provided with an inlet and discharge opening lying substantially perpendicular to the flow direction of the exhaust gases flowing out of said exhaust gas manifold, said second exhaust gas channel means having a larger cross-section than said first exhaust gas channel means.

3,844,120

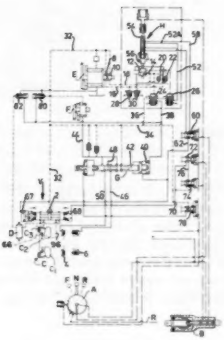
QUOTIENT REGULATOR FOR CONTROLLING HYDRODYNAMIC TRANSMISSION

Karl Gustav Ahlen, Stockholm, Sweden, assignor to S.R.M. Hydromekanik Aktiebolag, Stockholm-Vallingby, Sweden

Filed June 6, 1973, Ser. No. 367,378

Int. Cl. F16d *33/00*

U.S. Cl. 60—341 **25 Claims**



1. A quotient regulator control system for controlling the mode of operation of a transmission comprising:

a first pump adapted to be driven by the primary side of the transmission,

a second pump adapted to be driven by the secondary side of the transmission,

means for supplying fluid to the first pump,

pipe means for supplying the output of the first pump to the inlet of the second pump, wherein the pressure in the pipe means at any given time is dependent on the relative flow through the two pumps, which relative flow is in turn dependent on the relative speed of the primary and secondary sides of the transmission,

and a control means responsive to the pressure in said pipe means for transmitting a signal to change the mode of operation of the transmission.

3,844,121

MULTIPLE STAGE MASTER CYLINDER

Karl-Heinz Griesenbrock, Duisburg, Germany, assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 16, 1973, Ser. No. 333,423

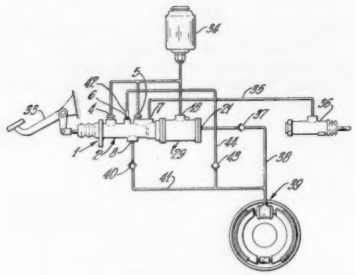
Claims priority, application Germany, Feb. 21, 1972, 2208039

Int. Cl. F16d *67/02*

U.S. Cl. 60—562 **14 Claims**

1. A hydraulic braking and clutching system comprising a hydraulic pressure cylinder, a first chamber formed in said cylinder, a first gallery communicating said first chamber with a fluid reservoir, a second gallery communicating with at least one wheel brake cylinder for pressurizing said cylinder, a third gallery communicating said first chamber with said wheel cylinder for return flow to said first chamber, a first piston linearly movable within said first chamber between a first

inoperative position to a second position in which said first chamber is pressurized, a second chamber formed in said cylinder, a fourth gallery communicating said second chamber with said fluid reservoir, a fifth gallery communicating said second chamber with a clutch slave cylinder, a valve member linearly movable within said second chamber between a first inoperative position and a second position in which said second chamber is pressurized, a second pressure cylinder, a third chamber formed within said second cylinder, a first



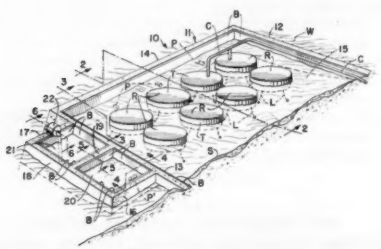
gallery communicating said third chamber with said reservoir, a second gallery communicating said third chamber with said wheel cylinder, a second piston linearly movable within said third chamber between a first inoperative position and a second position in which said third chamber is pressurized, pressure limiting means within said third chamber for limiting the pressurization of said third chamber to a predetermined maximum, and means operatively connected to said valve member for moving said second piston from said first to said second position upon movement of said valve member.

3,844,122

PROTECTED OFFSHORE STORAGE FACILITY

Woodrow E. Bliss, Jr., Pittsburgh, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Apr. 26, 1973, Ser. No. 354,639
Int. Cl. E02b *3/00, 3/04*
U.S. Cl. 61—1 **10 Claims**



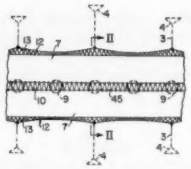
1. In combination: a rigid dike wall structure having opposite, spaced apart end walls extending from a shore of a body of water subject to wave and tide action and into the body of water, and a front wall connected to the end walls and extending in the body of water in spaced relation to the shore of the body of water, said dike wall structure extending from the floor of the body of water to above the surface of the body of water and enclosing a body of water protected from the wave action of the surrounding body of water; first flow control means in said dike wall structure to enable flow from the surrounding body of water into the enclosed body of water; a plurality of floating tanks moored side-by-side in the enclosed, protected body of water to store a liquid product having a specific gravity less than the specific gravity of the body of water, said tanks having a side wall with an open bottom and a fixed roof and buoyancy means connected with each tank to float the tank at the surface of the protected body of water; conduit means connected with the tanks to add product to and remove product from the tanks; and second flow control means in said dike wall structure to enable flow of water from the enclosed body of water to the surrounding body of water, but to prevent flow of leaked or spilled product from the enclosed body of water to said surrounding body of water, said dike wall structure thus protecting the tanks in the enclosed body of water from the wave and tide action of the surrounding body of water and also preventing contamination of the surrounding body of water by any product leaked or spilled from the tanks.

3,844,123

DEVICE FOR PRODUCING AND PROTECTING DEPOSITS OF SEDIMENTARY MATERIAL ON THE FLOOR OF BODIES OF WATER

Ole Jeppe Fjord Larsen, Fasanvaenget 62, Hjerting, Denmark

Filed Dec. 27, 1971, Ser. No. 212,056
Int. Cl. E02b *3/04*
U.S. Cl. 61—3 **9 Claims**



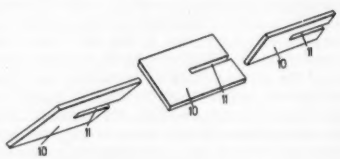
1. Apparatus for producing and protecting deposits of sedimentary material on a floor of a body of water, said apparatus comprising a pair of flexible elongated sheets in spaced side-by-side relationship located beneath the surface of the water in at least partial upwardly spaced relationship close to but above said floor, means for maintaining said sheets so positioned, rope means connecting together adjacent longitudinal edges of said spaced sheets, said sheets include longitudinally extending side portions diverging away from each other toward said floor, and means spaced along said sheet side portions for anchoring the same to said floor.

3,844,124

CONTROL OF EROSION

Earl Silas Tupper, Panama City, Panama, assignor to Tup (Panama) S.A., Panama City, Panama

Filed Jan. 23, 1973, Ser. No. 326,083
Claims priority, application Great Britain, Jan. 28, 1972, 4017/72
Int. Cl. E02b *3/04;* **E02d** *3/14*
U.S. Cl. 61—3 **7 Claims**



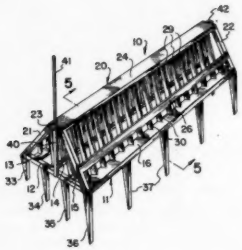
1. A means for hindering land erosion by flowing water which consists of a chain of members fitted together, said chain having a generally cruciform cross-section with the ends of two arms of said cross-section contacting the ground so as

to provide resistance to tipping, wherein each of said members is a generally flat rectilinear slab made of mechanically strong material with a specific gravity greater than that of water, and shaped to define an open-ended through slot of generally square cross-section extending along a notional center line of said slab for substantially one-half its length from one end thereof, and wherein the slots all face in the same direction and each slot accommodates substantially one-half the length of the next adjacent slab in said chain.

3,844,125
ANTI-EROSION DEVICE

Jimmie Driver Williams, Sr., 203 Pritchard St., Williamston, N.C. 27909

Filed July 13, 1973, Ser. No. 379,145
Int. Cl. E02b *3/04*
U.S. Cl. 61—3 **6 Claims**



1. An anti-erosion device for trapping and retaining earthen materials being eroded by water and wind in a localized area comprising an elongated frame, a superstructure mounted on said frame and extending upwardly therefrom, said superstructure including a plurality of spaced substantially parallel rows of generally vertically disposed post means, each of said post means in each of said rows being horizontally spaced relative to the adjacent post means of the same row thereby providing a plurality of vertically disposed and horizontally spaced openings along each of said rows, the post means of one row being horizontally staggered relative to the post means of the next adjacent row so that substantially all water or wind moving in a direction generally normal to said plurality of rows of said post means follows a tortuous path through said spaced openings in said rows and the earthen materials carried by the water or wind passing through said device are normally trapped by said post means, said frame having a substructure including downwardly extending ground-engaging spur means for penetrating the earth and anchoring said frame in fixed position, and means for connecting a plurality of frames together in assembled end-to-end relationship, whereby said post means trap and retain earth being eroded by water and wind.

3,844,126
AIR CUSHION VEHICLE

Leon C. Blurton, Brea, Calif., and Saverio J. Cina, Brooklyn, N.Y., assignors to Global Marine Inc., Los Angeles, Calif.

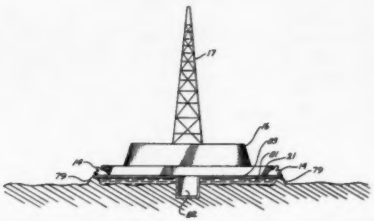
Division of Ser. No. 130,462, April 1, 1971, which is a division of Ser. No. 12,778, Feb. 19, 1970, Pat. No. 3,693,729. This application May 24, 1973, Ser. No. 363,524
Int. Cl. B63b *35/44*; **E02b** *17/00*; **B63b** *1/18*
U.S. Cl. 61—46.5 **3 Claims**

1. A method of establishing a temporary drilling site comprising the steps of:

surrounding the drilling site with a watertight barrier;

flooding the site within the barrier with water;

exposing the water to sufficiently low temperature to freeze the water, thereby producing a substantially flat, level,



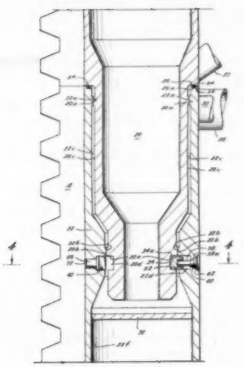
solid surface; and

placing a portable drilling station on the solid surface.

3,844,127
FLOATING DRILLING PLATFORM WITH QUICK DISCONNECT LEGS

Francis D. Koop, Jr.; John F. Woods; Kenneth J. Farmer, and Wayne D. Harbin, all of Houston, Tex., assignors to Marathon Manufacturing Company, Houston, Tex.

Filed May 9, 1973, Ser. No. 358,670
Int. Cl. E02b *17/00*; **F16l** *21/00*, *35/00*
U.S. Cl. 61—46.5 **19 Claims**



1. In an offshore drilling platform comprising a floating drilling platform, a plurality of legs mounted with said platform for longitudinal movement relative thereto and each leg having a tubular member, power means for raising and lowering said leg relative to said platform, and said leg including a removable upper section and a joint for connecting the removable section to the remaining portion of said leg; the improvement residing in said joint, comprising:

a female member having a plurality of longitudinally displaced raised annular surfaces,

a male member adapted to be received by said female member having a plurality of longitudinally displaced raised annular surfaces which mate with, and bear against, the corresponding raised annular surfaces of the female member, said raised annular surfaces being narrow with respect to the longitudinal length of the joint; and

locking means for releasably locking said male and female members together.

3,844,128
FOUNDATION MAT REPAIR

Eugene E. Harrison, 1661 Foothill Park Cir., Lafayette, Calif. 94549

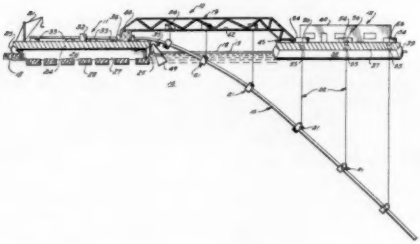
Filed Dec. 26, 1972, Ser. No. 318,492
Int. Cl. E02d 27/08
U.S. Cl. 61—50 1 Claim

1. The method of repairing a foundation mat which has become weakened by loss of contact of parts of the mat with the underlying soil which comprises forming an opening in the mat and injecting molten sulfur at a temperature in the range 160°- 170°C. through the opening into the area between the mat and the soil.

3,844,129
ARCTIC PIPELAYING

Robert B. Finlay, Houston, Tex., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Apr. 2, 1973, Ser. No. 347,148
Int. Cl. F161 1/00; B63b 1/34
U.S. Cl. 61—72.3 28 Claims



1. A method for laying submarine pipelines comprising the steps of

a. making up the pipeline on a buoyant make-up platform disposed over the line along which the pipeline is to be laid,

b. feeding make-up pipeline into the water rearwardly from the make-up platform,

c. coupling a buoyant support platform disposed a selected distance rearwardly of the make-up platform along the line to the make-up platform by a bridge structure engaged between the platforms above the water surface,

d. engaging the pipeline at spaced locations along its length rearwardly of the make-up platform with corresponding ones of a plurality of separately operable coupling assemblies each of which is supported by cable means to corresponding spaced locations along the bridge structure and the support platform, and

e. adjusting the effective lengths of the several cable means to define a desired support path for said length of pipeline.

3,844,130
AUTOMOBILE AIR CONDITIONING SYSTEM EMPLOYING AUXILIARY PRIME MOTOR

M. Ervin Wahnish, 624 E. Colonial Dr., Orlando, Fla. 32803

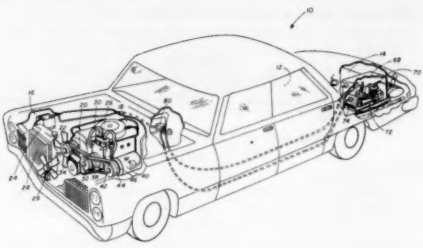
Filed July 9, 1973, Ser. No. 377,560
Int. Cl. B60h 3/04
U.S. Cl. 62—133 17 Claims

1. An auxiliary air conditioner drive system adapted for use with an automobile of the type having an air conditioning system associated therewith which is adapted to be driven by the drive means of said automobile, said auxiliary system comprising:

means completely carried by said automobile and independent of said automobile drive means for driving said air conditioner system; and

means carried by said automobile and independent of said engine for energizing said independent drive means;

means for disengaging said air conditioning system from said automobile drive means and engaging said independent drive means thereto; and

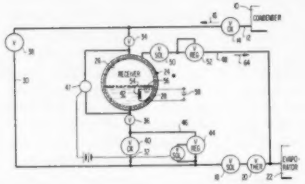


means electrically coupled to said air conditioner system and said independent drive means for electrically controlling said engaging and disengaging means.

3,844,131
REFRIGERATION SYSTEM WITH HEAD PRESSURE CONTROL

Sebastian J. Gianni, Hartford, Conn.; William M. Seeley, Putnam, N.Y.; Timothy Jay Stillson, Glastonbury, Conn.; Clark B. Hamilton, Wethersfield, Conn., and Perley K. Barker, Hartford, Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed May 22, 1973, Ser. No. 362,708
Int. Cl. F25b 41/00
U.S. Cl. 62—149 14 Claims



1. In a closed loop refrigeration system including, in order, a compressor, a condenser and an evaporator and having a refrigerant circulating therebetween under control of a flow control device in the high pressure liquid refrigerant feed line coupling the condenser to the evaporator, the improvement comprising:

a liquid refrigerant receiver, a conduit fluid coupling said receiver to said liquid feed line upstream of said flow control device and downstream of said condenser,

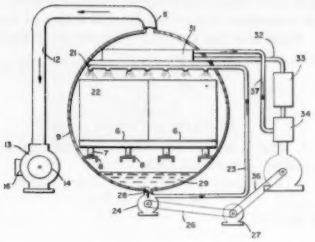
a check valve within said conduit between said receiver and said feed line for permitting liquid refrigerant flow from said receiver feed line when said feed line pressure is below that of said receiver but preventing reverse flow, and

a pressure regulation valve bypassing said check valve and fluid connected between said receiver and said feed line downstream of said condenser and upstream of said flow control device to permit high pressure liquid refrigerant to enter said receiver from said feed line to charge said receiver.

3,844,132
PRODUCE COOLER AND METHOD OF COOLING PRODUCT

Hugo Miller, and Floyd E. Miller, both of Fremont, Calif., assignors to Inter Process Corporation, Burlingame, Calif.

Filed Sept. 14, 1973, Ser. No. 397,291
Int. Cl. F25b *19/00*
U.S. Cl. 62—268 **6 Claims**

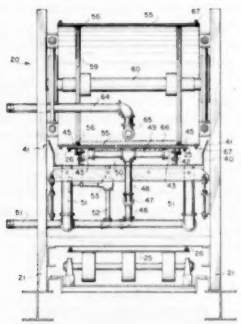


1. A produce cooler comprising a vacuum chamber, means in said chamber for supporting produce therein, means for pumping out said chamber to provide a vacuum therein, means in said chamber for discharging water into said vacuum in said chamber at a point above said produce and from which said water is free to run by gravity over produce supported in said chamber, and means in said chamber for mechanically refrigerating water vapor therein and condensing said water vapor in said vacuum at a location above said produce and from which said condensed water vapor is free to run by gravity over produce supported in said chamber.

3,844,133
DOUBLE CONVEYOR CONTACT FREEZER

Howard L. Bierley, Chambersburg, and Phares B. Witmer, III, Greencastle, both of Pa., assignors to Frick Company, Waynesboro, Pa.

Filed Aug. 6, 1973, Ser. No. 385,765
Int. Cl. F25c *5/14*
U.S. Cl. 62—341 **11 Claims**

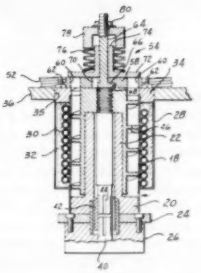


1. In an apparatus for modifying the temperature of a product, said apparatus having upper and lower conveyors engageable with opposite sides of a product to be treated, means for driving said conveyors, a trough located below said lower conveyor, and a pool of temperature modifying fluid within said trough in heat exchange relationship with said lower conveyor; the improvement comprising a pair of spaced generally parallel weir means carried by said upper conveyor and extending lengthwise thereof, means for continuously introducing temperature modifying fluid into the area between said weir means to provide a second pool of temperature modifying fluid in heat exchange relationship with said upper conveyor, the fluid in said second pool overflowing said weir means for substantially their entire lengths, and obstruction means beneath each lateral edge of said upper conveyor for preventing the flow of temperature modifying fluid beneath said upper conveyor as it flows over the edge thereof, whereby each of said conveyors is in direct heat exchange relationship with a pool of temperature modifying fluid.

3,844,134
AUGER TYPE ICE CUBE MAKER

Harvey R. Krueger, Carpentersville; Charles G. Neumann, Palatine, and Leroy Peterson, Hoffman Estates, all of Ill., assignors to Reynolds Products, Inc., Schaumburg, Ill.

Filed Dec. 13, 1972, Ser. No. 314,781
Int. Cl. F25c *1/14*
U.S. Cl. 62—354 **4 Claims**



1. Apparatus for forming pieces of hard clear ice including in combination, a forming unit comprising a shaping plate having an open-ended forming chamber therein, a pressure plate adapted to close one end of said forming chamber, and means for urging said pressure plate against said forming plate with a predetermined force, means mounting said forming unit for movement from an ice-making station to an ice-harvesting station, means at said ice-making station for urging slush ice into the forming chamber through the other end thereof against the action of said pressure plate to form a clear hard piece of ice in said forming chamber, means responsive to movement of said pressure plate under the action of said piece of ice against the action of said urging means for moving said forming unit from said ice-making station to said harvesting station and means at said harvesting station for actuating said pressure plate to eject said piece of ice.

3,844,135
COOLING SYSTEM FOR SAUSAGES

Anthony W. Zamiara, Spencerport, N.Y., assignor to Maplecrest Sausage Co., Inc., Rochester, N.Y.

Filed Mar. 22, 1973, Ser. No. 344,059
Int. Cl. F25d *7/02*
U.S. Cl. 62—375 **3 Claims**

1. A cooling system for chilling sausages comprising

a. a cooling tunnel with an inlet port and an outlet port, a reservoir formed within said tunnel,

b. a refrigeration unit including a heat exchanger, an inlet conduit connected between one side of said heat exchanger and the inlet port of said tunnel, and an outlet conduit connected between the other side of said heat exchanger and the outlet port of said tunnel,

c. a cooling solution,

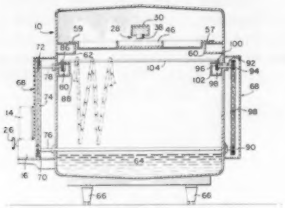
d. pump means for forcing said cooling solution collected within said reservoir to circulate through said cooling tunnel and said refrigeration unit,

e. chain means extending longitudinally through said cooling tunnel, said chain means being adapted to advance sausages through the tunnel,

f. motor means to drive said pump means and said chain means,

g. spray means disposed within said cooling tunnel with the inlet for said spray means being connected to the inlet port of said cooling tunnel,

h. said spray means comprising an elongated pipe that extends longitudinally through said tunnel near the top thereof a plurality of outlets spaced along said pipe, the



invention being characterized by a barrier formed of wire-like mesh located beneath said pipe and extending longitudinally through said tunnel, and a plurality of upwardly opening receptacles positioned atop said barrier in alignment with said outlets of said pipe, whereby the cooling solution forced through the pipe by said pump means exits through said plurality of outlets, fills said receptacles, and then spills over said receptacles and passes through said wire-like mesh barrier to form a fine mist of minute droplets within the cooling chamber which contact the sausages to chill same.

3,844,136

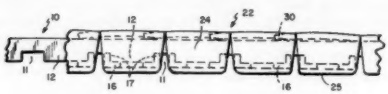
BRACELET COMPONENT INCLUDING FLEXIBLE STRIP COVERED WITH LINK-LIKE SHELLS

Kurt A. Rieth, and Edwin E. R. Hoffmann, both of Gaspee Plateau, R.I., assignors to Tertron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 289,981, Sept. 18, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 386,069

Int. Cl. A44c *5/00*

U.S. Cl. 63—4 **12 Claims**



1. A component for use in making a bracelet comprising

an elongate strip of plastic material which is flexible transversely of its thickness having a series of substantially parallel grooves extending transversely of and inwardly from its bottom surface to provide a series of substantially parallel raised elements between said grooves, the upper surface of said strip being substantially flat and devoid of grooves,

a series of bottom shells, each bottom shell having a bottom wall positioned adjacent to the surface of a respective one of said raised elements and substantially parallel side walls positioned adjacent to the sides of said associated one raised element,

a series of top shells one associated with each said bottom shell, each top shell having a top wall positioned adjacent to said upper surface of said strip, said top walls having side edges with the side edges of adjacent ones of the top shells being adjacent to each other to present a substantially continuous upper surface, said top shell also having end walls extending from the ends of said top wall adjacent to the sides of said strip, the ends of the respective raised element and thence inwardly adjacent to end portions of said bottom wall of said associated bottom shell, and means for directly securing said top shell to the associated bottom shell, said means comprising said end walls of the top shell,

whereby said series of top and bottom shells are secured together in pairs, said strip of plastic material is substantially concealed from view by said series of top and bottom shells and the bracelet component is flexible transversely of its thickness.

3,844,137

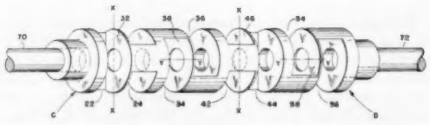
FLEXIBLE COUPLING

Martin J. Zugel, Cleveland, Ohio, assignor to Cyclo Index Corporation, Cleveland, Ohio

Filed July 16, 1973, Ser. No. 379,384

Int. Cl. F16d *3/52*

U.S. Cl. 64—15 B **9 Claims**



1. A flexible coupling member comprising, a substantially rigid cylindrical member having a longitudinal axis, a longitudinal bore, a main body portion, opposite end portions and rotary shaft securing means for securing shaft end portions in said bore at said opposite end portions, a plurality of longitudinally-spaced opposed pairs of overlapping slots in said body portion transversely of said axis positioned to provide said body portion with a plurality of interconnected leaf springs, said opposed pairs of slots including a first pair of longitudinally-spaced slots angularly displaced substantially 180° apart to define a first leaf spring therebetween and including a first slot positioned closest to one of said opposite end portions and a second slot positioned further from said one opposite end portion, a second pair of longitudinally-spaced slots angularly displaced substantially 90° relative to said first pair of slots and substantially 180° relative to one another to define a second leaf spring therebetween extending substantially perpendicular to said first leaf spring, a third pair of slots defining a third leaf spring therebetween extending substantially parallel to said first leaf spring, said third pair of slots being in angular alignment with said first pair of slots and including a first slot positioned closest to said one opposite end portion in angular alignment with said second slot of said first pair of slots, said first and third leaf springs having opposite spring end portions substantially aligned axially of said body portion, and said one opposite end portion being effectively connected with one of said spring end portions on said first spring and with an opposite spring end portion on said third spring.

3,844,138

CONNECTING DEVICE

David Samiran, 148 Northwest Rd., and Arthur H. Moore, 46 Northwest Rd., both of Westfield, Mass. 01085

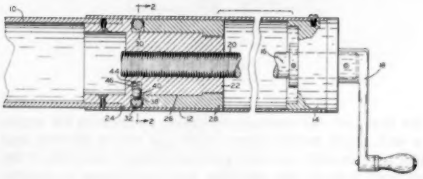
Filed Jan. 24, 1973, Ser. No. 326,373

Int. Cl. F16d *7/02*

U.S. Cl. 64—30 E **7 Claims**

1. In a connecting device for interconnecting a pair of telescopically engaged members in torque transmitting relation; first and second members adapted for telescopic engagement, one of said members having a smooth internal cylindrical surface and the other of said members having a smooth external cylindrical surface, said surfaces being opposed when

said members are in telescopic engagement, an annular groove in the said surface of said first member and opening toward the said surface of said second member, a connector element having at least two split wire rings in adjacent coaxial relation, the terminal end of one ring when proceeding about the rings in one circumferential direction being fixed to the beginning end of the next adjacent ring, said connector element being disposed in said groove and having a free diameter such that the connector element is radially stressed by engagement with said surface of said second member when said



members are disposed in telescopic engagement with said connector element within the range of axial overlap of said members, and means nonrotatably connecting at least one circumferential point of said connector element to said first member while leaving the remainder of the circumference of said connector element free, the side of said connector element which faces said second member frictionally engaging the said surface of said second member whereby torque exerted between said members in at least one direction will cause said connector element to bind on said second member and prevent relative rotation between said members.

3,844,139

INSTALLATION FOR THE CONTROL OF KNITTING MACHINES

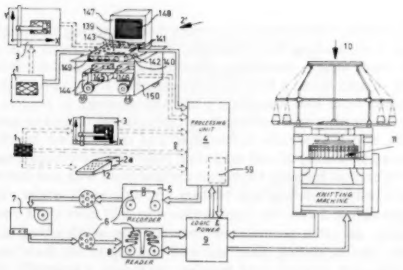
Aymon A. De Cerjat, and Claude M. Millet, both of Neuchatel, Switzerland, assignors to Edouard Dubied & Cie S.A.

Filed Feb. 24, 1970, Ser. No. 13,581

Claims priority, application Switzerland, Feb. 24, 1969, 2737/69; July 22, 1969, 11181/69; Aug. 20, 1969, 12592/69

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **9 Claims**



1. Installation for the electronic control of a circular knitting machine from a pattern to be reproduced, comprising a memory (such as **59**) for storing, in form of coded information, a limited number of elements from said pattern, means for the inscription of said elements in said memory, means for the selective interrogation of said memory as a function of the characteristics of said knitting machine and of said pattern, means for decoding and switching over coded information from said memory, and means for the transformation of the decoded information into electrical signals for the control of the machine, said memory and said transformation means being connected by two channels, namely a direct channel for the direct transfer of the contents of said memory to said transformation means, and an indirect channel for the transfer of several times the different contents of the memory by means of an intermediary information carrier, corresponding to several subdivisions of a pattern which has a greater number of elements than the memory can store.

3,844,140

DEVICE FOR INCREASING THE AVERAGE ANGULAR VELOCITY OF THE CYLINDERS OF CIRCULAR HOSIERY

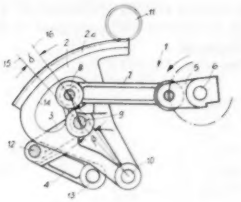
Francesco Lonati, Via Valsorda 28, Brescia, Italy

Filed Feb. 8, 1973, Ser. No. 330,610

Int. Cl. D04b *15/16*

U.S. Cl. 66—56 **4 Claims**

1. Device for increasing the average angular velocity of the needle-bearing cylinder of a drive-shaft driven circular hosiery machine, said device comprising:



a. a link-crank unit including a link having a wrist pin at one end thereof and a crank member, said link-crank unit being actuated by the drive-shaft;

b. a rack segment gear train-connected to the cylinder and pivotably mounted to the machine;

c. a lever-arm unit positioned intermediate said rack segment and the wrist pin of the link of said link-crank unit, said lever-arm unit comprising a first order lever having a fulcrum that is pivotably connected to said rack segment, said first order lever further including a driving extremity and a following extremity, said driving extremity being pivotably connected to said wrist pin of said link, said lever-arm unit further comprising an arm, and said following extremity of said first order lever being pivotably connected to one extremity of said arm of said lever-arm unit, the opposite extremity of said arm of said lever-arm unit being connected to a stationary portion of the hosiery machine.

3,844,141

ADJUSTABLE SINKER CAMS ON CIRCULAR KNITTING MACHINE

Heiner Haustein, Hauptstr. 210, Leubsdorf; Dieter Laube, Frankenau 296, Frankenau, and Christa Bottger, Karl-Marx-Str. 28m, Mittweida, all of Germany

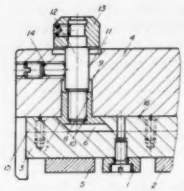
Filed Nov. 9, 1972, Ser. No. 305,033

Int. Cl. D04b *15/24*

U.S. Cl. 66—108 **7 Claims**

1. A circular knitting machine comprising a sinker plate slide mounted for sliding movement in a guide and in face to face relationship with a lock support, a screw threaded passageway in said lock support, and adjusting screw threaded in said passageway said passageway opening to the interface of said support and slide, a passageway formed in said slide and inclined to said guide, said slide passageway opening to the interface of said support and slide and registering with the lock support passageway, an adjusting member carried by said screw and disposed in said slide passageway and having

surface abutting each side of said slide passageway whereby when the adjusting member is moved in opposite directions by



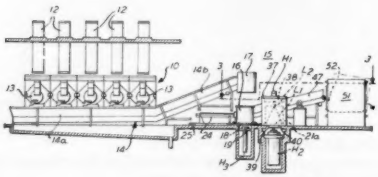
said screw the slide is moved in opposite directions in said guide by the interaction of the adjusting member and said sides of the slide passageway.

3,844,142

LAUNDRY SYSTEM USING HYDRAULIC EXTRACTOR

John J. Miller, Cincinnati, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 16, 1973, Ser. No. 341,997
Int. Cl. D06f *39/00*
U.S. Cl. 68—19.1 **15 Claims**



1. A laundry system comprising a plurality of washing machines, a single hydraulic compression-type extractor, an extractor container having an upwardly-shiftable bottom wall, a conveyor for transporting a loose load of wash from said washing machines to said container while the container is in a load-unload position, a chute for directing said loose load from the output of said conveyor into said container, power means for shifting said container in a path from said load-unload position to an extractor position within said extractor, for actuating said extractor to compress said load, and for returning said container with the compressed load to its start position, a tumbling machine, a conveyor for transporting said compressed load from said container to said tumbling machine, and means operable when said container is returned to load-unload position for raising said compressed load out of said container and for shifting the same sidewise onto said last mentioned conveyor.

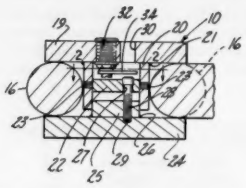
3,844,143

PINTLE HOOK LOCKING DEVICE

Ralph D. Hudson, 3911 Dill Rd., Drayton Plains, Mich. 48020

Filed May 4, 1973, Ser. No. 357,342
Int. Cl. B60r *25/00*; **E05b** *67/36*
U.S. Cl. 70—14 **7 Claims**

1. An anti-theft locking device releasably applicable to a coupling hook of a trailer type vehicle to thereby safeguard the latter by blocking effective access to the bight of said hook from the exterior thereof; said device comprising a first part insertable in said bight from one side of the hook, a second part in fixed relation to said first part and proportioned to overlie and effectively shield said hook in sufficient of the area of said bight to forestall an unauthorized effort to remove the device from said hook, a third part engageable with said first part from the side of said hook opposite said one side of the latter with said parts in releasable assembly, said portion of said third part being internally telescoped in a sleeve portion



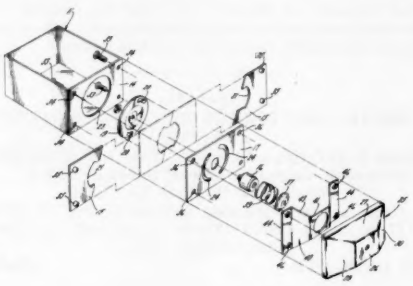
of the first part, the second part having an opening for access of a tool, screw means aligned with said access opening and acting to releasably hold said parts in antitheft assembly in the telescoped area of said portions, and lock means to prevent unauthorized actuation of said screw means.

3,844,144

COIN VAULT

Donald E. Schmitt, Rockford, Ill., assignor to Reed Industries, Inc., Rockford, Ill.

Filed Oct. 30, 1973, Ser. No. 410,980
Int. Cl. E05b *65/46*; **A47b** *88/04*
U.S. Cl. 70—86 **2 Claims**

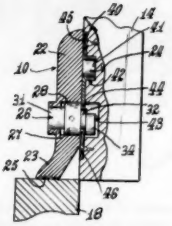


1. A coin vault comprising a cash drawer having an upright front wall, locking bolts disposed adjacent the front side of said front wall, a mounting plate located adjacent the front sides of said bolts, a lock cylinder attached to and projecting forward from said mounting plate and adapted to receive a key for moving said bolts between locked and unlocked positions, and a generally rectangular and dish-shaped housing located forwardly of said mounting plate and surrounding said cylinder, said housing having an upright front wall and having rearwardly extending top, bottom and side walls whose rear edges define a rim, the improvement in said coin vault comprising, an extra security member for use in attaching said bolts, said mounting plate and said housing to the front wall of said cash drawer, said member including a generally flat plate lying against the rear side of the front wall of said housing and located between the side walls thereof, wings formed integrally with and extending rearwardly from the side margins of said flat plate, means rigidly welding said wings to the top and bottom walls of said housing, flanges formed integrally with and projecting from the rear margins of said wings and toward said side walls and being located adjacent said rim, threaded holes formed through said flanges adjacent the corners or said housing, and fasteners extending through said front wall of said cash drawer, said bolts and said mounting plate and threaded into said holes to attach said bolts, said mounting plate and said housing to said cash drawer.

3,844,145
LOCK FOR A MOVABLE CLOSURE

Clarence H. Kneebone, 945 Wayne Ave., Deerfield, Ill. 60015

Continuation-in-part of Ser. No. 107,952, Jan. 20, 1971, Pat. No. 3,732,709. This application Apr. 24, 1973, Ser. No. 354,107
Int. Cl. E05b 65/08
U.S. Cl. 70—90 7 Claims

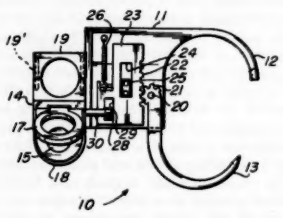


1. Lock means for a closure assembly including at least one relatively movable closure element having marginal portions overlapping another element of said assembly, comprising, a body adapted to be mounted on one of said elements in abutment with the other element, a mounting plate adapted for attachment to said one element beneath said body, means on said body to prevent displacement of said body relative to said other element, and a lock assembly carried by said body, said mounting plate having a sleeve adaptable to project into said one element and means for receiving said lock assembly therethrough, and said lock assembly extending through said mounting plate and being engageable in said one element beneath said receiving means to removably secure the body in place.

3,844,146
WHEEL LOCK

Juan M. Fouces, and Manuel Fouces, both of 2534 S.W. 9th No. 2, Miami, Fla. 33135

Filed May 24, 1973, Ser. No. 363,343
Int. Cl. B62h 5/16
U.S. Cl. 70—227 6 Claims

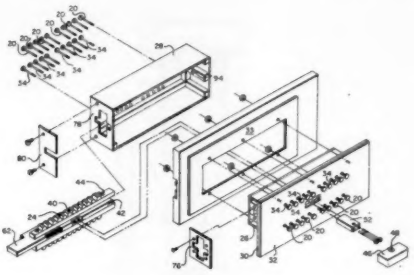


1. A locking device for a wheel supported body comprising:
a. mounting means for securing said locking device to said body;
b. engaging means included in said locking device for engaging at least one supportive wheel of said body to prevent said one wheel from freely rotating relative to said body, said one wheel including an annular rim section and radially extending support means;
c. activating means included in said locking device for moving said engaging means into and out of engagement with said one wheel to respectively prevent or permit free rotation of said one wheel relative to said body, said engaging means further including jaw means for encircling said rim section to engage said radially extending support means upon partial rotation of said one wheel, said jaw means comprises a stationary member, relative to said body, and another member, pivotable relative to said stationary member; and
d. releasable lock means included in said activating means for selectively retaining said engaging means in engagement with said one wheel and for permitting said engaging means to move out of engagement with said one wheel when said lock means is released.

3,844,147
COMBINATION LOCK

John Charles Windle, P.O. Box 370, Honey Brook, Pa. 19344

Filed Apr. 30, 1973, Ser. No. 355,415
Int. Cl. E05b 37/16
U.S. Cl. 70—298 6 Claims

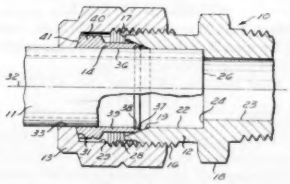


1. In a combination lock, a lock consisting of a housing, pins and guides in the housing, a sliding locking bar operating in the pins and guides, and permitting removal of the sliding locking bar when the lock is unset, an intermediate plate on the lock for mounting the lock and permitting fastening of the lock to a door, screws fixing the intermediate plate to the door, an outer plate covering the screws, means for fastening the outer plate to the intermediate plate, and means for covering the means for fastening the outer plate to the intermediate plate, said means for covering being operative when the lock is locked and said means for covering being exposed for removal when the lock is unlocked and the locking bar removed.

3,844,148
CORROSION-RESISTANT FLARELESS TUBE FITTING-RING

Hiralal V. Patel, Euclid; Anthony J. Olejarczyk, Cleveland, and Nathan J. Fitzthum, Euclid, all of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed Mar. 23, 1973, Ser. No. 344,125
Int. Cl. B21d 19/00
U.S. Cl. 72—70 14 Claims



1. A method of forming an integral cutting and sealing sleeve for a tube fitting comprising the steps of forming a tubular blank from a body of work hardenable metal, locally

work hardening an internal circumferentially continuous zone of material at an end portion of the blank while maintaining the original hardness of the blank material in a major portion of the body, subsequently machining the interior of the sleeve to produce a circumferentially continuous cutting and sealing edge in the work hardened zone whereby the sleeve is adapted to cut and seal a tube having a hardness as great as that of the major portion of the blank.

3,844,149

PIPE NECKING APPARATUS

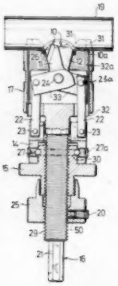
Elmar Hansen, Munich, Germany, assignor to Dako-Werkzeugfabriken David Kotthaus KG, Remscheid, Germany

Filed Nov. 29, 1973, Ser. No. 420,289

Claims priority, application Germany, Dec. 4, 1972, 2259638; June 5, 1973, 23284619

Int. Cl. B21d *51/38*

U.S. Cl. 72—71 **15 Claims**



1. A pipe necking apparatus, comprising rotatable support means having a longitudinally extending axis and a front end portion; an elongated drill bit composed of two longitudinally extending drill bit sections each formed with an outwardly extending pressure face and with a leading end; pivot means mounting said sections on said support means for arrestable displacement between one position in which said sections and leading ends overlap and are recieved in a hole formed in the pipe, and a plurality of other positions in each of which said sections and leading ends are spread apart to a different extent in excess of the diameter of said hole; actuating means for effecting displacement of said sections to respective ones of said other positions when said sections are received in said hole; a sleeve fittingly surrounding said sections and having a forward end engaging a pipe to be necked so that said sleeve is prevented from rotation relative to the pipe; and mounting means mounting said sleeve on said support means for rotation of the same relative to the sleeve, so as to advance relative to said support means and said sections towards the pipe in response to rotation of said support means, to thereby extract the spread-apart sections from said hole and neck the pipe.

3,844,150

APPARATUS FOR FORMING COILS USING ROUND CONDUCTOR WIRE

Robert D. Mees, Fort Wayne; Albert F. Wilcox, Yoder, both of Ind., and Herman H. Schall, Rome, Ga., assignors to General Electric Company, Indianapolis, Ind.

Filed Dec. 26, 1973, Ser. No. 427,512

Int. Cl. B21f *3/04*

U.S. Cl. 72—206 **9 Claims**

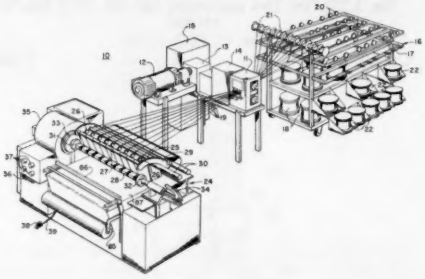
1. Apparatus for winding at least one coil of flattened electrical conductor wire from round conductor wire, comprising:

a. a wire flattening mill for flattening round conductor wire;

b. first drive means connected to said wire mill for causing said wire mill to produce flattened wire at a predetermined wire rate;

c. a coil winding machine including an arbor on which the at least one coil is wound; and

d. second drive means for rotating said arbor, said second drive means tending to drive said arbor at a wire rate



substantially in excess of the wire rate of said wire mill; said second drive means including a clutch for controlling the force with which the wire is wound about said arbor.

3,844,151

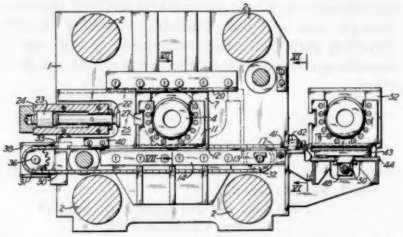
EXTRUSION PRESS WITH DIE CHANGER

Helmut B. Huertgen, Pittsburgh, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Sept. 17, 1973, Ser. No. 397,854

Int. Cl. B21c *23/00*

U.S. Cl. 72—263 **10 Claims**



1. In an extrusion press, a platen having a vertical face and an extrusion-receiving passage perpendicular to said face, an extrusion die holder slidable horizontally along said face and normally located in line with said passage, a longitudinally movable rigid elongated member disposed at one side of said holder and extending laterally away from it, a slide engaging said side of the die holder, means for moving said member lengthwise to push said holder laterally into a predetermined position at one side of said platen passage, a chain attached to said slide and extending across said platen, means for driving the chain to cause the slide to push said holder from said predetermined position to a second position out beyond the adjacent side of said platen, and means at said side of the platen for receiving said die holder in said second position.

3,844,152

CONTINUOUS DRAWING BENCH

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Societe Anonymedite: Vallourec (Usines a tubes de Lorraine-Escaut et Vallourec Reunies), Paris, France

Filed Jan. 24, 1973, Ser. No. 326,236

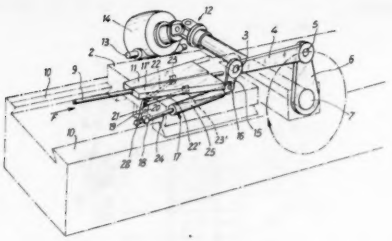
Claims priority, application France, Jan. 25, 1972, 7202377

Int. Cl. B21c *1/14*

U.S. Cl. 72—290 **7 Claims**

1. In a bench for drawing elongated material in which the material is drawn through a die by being successively gripped by a plurality of pairs of jaws, each mounted on an individual

carriage slidable upon the framework of the machine parallel to the direction of drawing, the improved drive system in which each carriage is pivotally connected to one end of an individual connecting rod the other end of which is pivotally connected to an individual rotatably mounted crank, said drive system further comprising means causing said connect-



ing rods to impart a substantially constant linear speed to each of said carriages during a part of the movement of that carriage during which the jaws mounted on that carriage exert traction on the material being drawn, and means driving all of said cranks synchronously, with each of said cranks being angularly spaced from the next crank by the same angular distance.

3,844,153

WIRE CROPPING AND FORMING TOOLS AND TO A METHOD OF UTILISING THE SAME

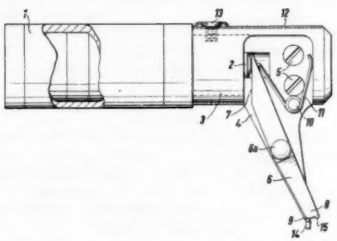
Edwin James Rose, Fareham, England, assignor to Elite Engineering Limited, Fareham, England

Division of Ser. No. 814,409, April 8, 1969, abandoned. This application Dec. 13, 1971, Ser. No. 207,608

Claims priority, application Great Britain, Apr. 10, 1968, 17176/68

Int. Cl. B21f *21/00*; **B21d** *9/08, 37/12*

U.S. Cl. 72—332 **1 Claim**



1. A wire cropping and forming tool including a fixed tapered blade member, a movable tapered blade member pivotally mounted to the fixed blade member for movement relative thereto, each blade member having upper and lower surfaces and a nose, with the lower surface of the movable blade member being in engagement with the upper surface of the fixed blade member, the fixed blade member having at its nose a notch defined by a shearing edge extending from the upper surface substantially normal thereto and terminating short of the lower surface and an extension surface extending outwardly from said shearing edge substantially normal thereto between the shearing edge and the lower surface, the movable blade member having at the nose thereof a lug extending from the lower surface substantially normal to the lower surface, the lug having a shearing edge extending from the upper surface substantially normal thereto, the arrangement being such that with a wire inserted between the noses and upon movement of the movable blade member, the shearing edge of the lug coacts with the shearing edge of the fixed blade member to crop the wire and upon continued movement, the lug bends the wire.

3,844,154

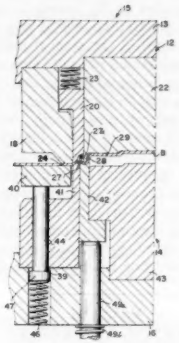
METHOD AND APPARATUS FOR FORMING A CAN END

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 56,423, July 20, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 308,217

Int. Cl. B21d *28/00*

U.S. Cl. 72—336 **4 Claims**



1. Apparatus for forming a container end closure having a curled flange adapted to be double seamed to a container body, said apparatus comprising an upper die assembly and a lower die assembly mounted for reciprocable movement between an open and closed position, said upper die assembly having an axial punch, said lower die assembly having an axial anvil, an annular punch on said upper die assembly and a coacting cutting ring on said second die assembly for severing a disk blank from a sheet metal strip, said punch and anvil having complementary center opposing profiles including means for grasping and forming a center portion of the blank therebetween during the closing portion operation of said means, an upper drawing ring disposed between said annular punch and said axial punch, and a lower drawing ring disposed between said cutting ring and said anvil, groove means on said cutting ring coacting with said lower drawing ring for forming a peripheral flange on said disk blank when said die assemblies move to said closed position, said upper drawing ring having a circumferential groove including an inwardly contoured surface at the upper end thereof for curling said flange inwardly when said die assemblies move to said open position to form a curl about the periphery of said disk accompanied by simultaneous separating movement of said means to an open position and releasing said center portion whereby during curling said blank is grasped solely about its periphery by said lower drawing ring and said axial punch.

3,844,155

METHOD OF MAKING A SLUG HAVING CONTROLLED GRAIN DIRECTION

Rudolph V. Bew; Anderson J. Walters; Donald J. Funk, and Joseph R. Frazier, Jr., All of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Apr. 9, 1970, Ser. No. 26,848

Int. Cl. B23p *17/00*

U.S. Cl. 72—356 **2 Claims**

1. A method of making a slug having an improved grain orientation wherein the individual grains thereof are in sub-

stantially parallel relation, said method comprising the steps of, severing an elongated wrought rod having a predominant grain direction to define a rod blank having a desired weight, supporting said blank on a first forming apparatus, partially forming said blank with said first forming apparatus to define a partially formed blank, placing the partially formed blank in an extrusion cavity of a second forming apparatus with its predominant grain direction arranged transverse the direction of forming movement of said second forming apparatus and in a stationary position relative to said cavity, and relatively moving a die and a cooperating ram of said second forming apparatus against said partially formed blank with said blank in its stationary position to define said slug having the individual grains thereof arranged substantially parallel and with the parallel grains being arranged in a direction which is perpendicular to the direction of forming movement of said second apparatus, said extrusion cavity having a volume which is slightly greater than the volume of said slug and said step of relatively moving comprises the step of impacting said ram and die forcefully against said partially formed blank causing it to fill practically the entire volume of said cavity and define said slug which has a smooth exterior free of projections, said rod comprising a rod of substantially rectangular cross-sectional outline, said severing step comprising severing said rod to define said blank having approximately the shape of a parallelepiped, said supporting step comprising supporting said blank on said first forming apparatus with its predominant grain direction arranged transverse the direction of forming movement of said first forming apparatus, said step of partially forming comprising rounding certain corners of said blank to assure provision of said slug having said smooth exterior surface.

3,844,156

BENDING APPARATUS

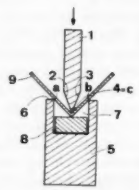
Eduard Hanni, Zofingen/CH, and Walter Gygli, Niederbipp/CH, both of Switzerland, assignors to Hammerle AG Maschinenfabrik, Zonfingen, Switzerland

Filed Apr. 2, 1973, Ser. No. 347,043

Claims priority, application Switzerland, Apr. 13, 1972, 3188/72

Int. Cl. B21d 7/06

U.S. Cl. 72—389 **4 Claims**



1. Bending apparatus for bending sheets, comprising a punch and a cooperating die, a longitudinally extending recess in the surface of the die turned toward the punch, a stop member disposed in the bottom of the recess and having bottom and top surfaces, and means for changing said stop member to provide a different spacing between said bottom and top surfaces in the die recess, whereby, the degree of bending can be varied by changing said spacing of the stop member.

3,844,157

MACHINE FOR APPLYING FORCE

Horst Bachmann, Rodental, Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Coburg, Germany

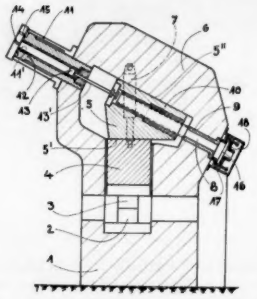
Filed June 29, 1972, Ser. No. 267,596

Claims priority, application Germany, June 30, 1971, 2132377

Int. Cl. B21j 11/00

U.S. Cl. 72—452 **5 Claims**

1. A forming apparatus comprising means for selectively pressing or impacting and including force-transmitting means operatively connected to a reciprocatable ram including plural tool elements for effecting independent forming operations, the force-transmitting means comprising, in combination, a drive assembly operatively connected to a wedge member, the wedge member being operatively connected to a threaded spindle, said spindle having a longitudinal axis operatively connected to and extending in the direction of converging wedge surfaces of the wedge member, transversely to the direction of reciprocation of the ram, said drive assembly including selectively displacable fluid pressure-operated portions for selectively operating the reciprocatable ram through said wedge member for effecting press forming operations, said portions including a second drive, said sprindle, when rotated by said second drive, being operative to move said wedge member and effect impact-forming operations.



3,844,158

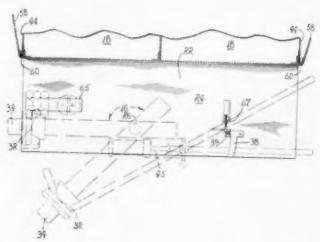
MOBILE MUFFLER SHOP

Floyd W. Mercer, 3725 E. Hampton Way, Fresno, Calif. 93726

Filed Nov. 19, 1973, Ser. No. 416,931

Int. Cl. B21d 9/00

U.S. Cl. 72—455 **10 Claims**



1. A mobile muffler shop comprising:

a mobile chassis;

a body mounted on said chassis and having a pair of oppositely disposed body sides and a pair of oppositely disposed body ends;

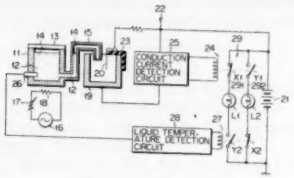
a tube bender having a proximal end mounted in said body adjacent a first of said body ends, and a distal end with bending jaws, said tube bender being pivotally mounted on said chassis for swinging movement from a stowed position with said bender extending between said body sides to a variety of work positions with said distal end extended outwardly beyond said first body end; and

storage compartments formed in said body adjacent said tube bender and disposed to store muffler supplies, said storage compartments being positioned to avoid interference with a tail pipe disposed in said tube bender bending jaws, when said bender is in said work positions.

3,844,159
LIQUID QUALITY EVALUATING APPARATUS

Masumi Mizutani, Gifu; Fukuo Hata, Tokyo, and Hiromu Kamatani, Yokohama, all of Japan, assignors to Showa Industries Co., Ltd., Gigu-ken; Kitoku Co., Ltd., Tokyo and Fujisoku Electric Co., Ltd., Kawasaki-shi, all of, Japan

Filed Jan. 31, 1973, Ser. No. 328,373
Int. Cl. G01h 25/10; G08b 23/00
U.S. Cl. 73—17 A 6 Claims



1. Apparatus for determining whether the boiling point of hygroscopic liquid such as automotive brake fluid is at least above or below a reference temperature comprising:

a first substantially closed vessel made of heat conductive material for containing a predetermined sample of liquid to be tested, said vessel being provided with a nozzle projecting from a side wall, said nozzle having at least a portion higher than the level of the sample liquid within said vessel;

means for controlled heating of said vessel;

a second vessel made of electrically conductive material, positioned to receive said sample liquid when forced through said nozzle by boiling in said first vessel;

a needle-like electrode having one end disposed within said second vessel so as to be in contact with the boiled sample liquid therein;

a current detection circuit forming a closed path through at least the boiled sample liquid within said second vessel and saie needle-like electrode for producing an output signal in response to contact of the boiled sample with said electrode;

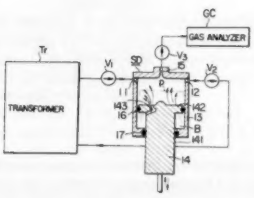
means for providing a different signal whenever the temperature of liquid in said first vessel reaches a reference temperature; and

indicating means responsive to said signals to indicate at least whether the boiling point of said sample liquid is above or below a reference temperature.

3,844,160
OIL-IMMERSED TRANSFORMER GAS ANALYSIS

Michihiko Yamaoka, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Aug. 27, 1971, Ser. No. 175,509
Claims priority, application Japan, Aug. 27, 1970, 45-75209
Int. Cl. G01n 7/00
U.S. Cl. 73—19 4 Claims

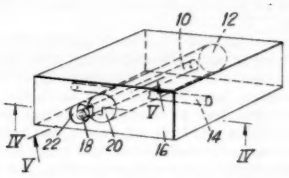


1. A sampling and testing device for diagnosing a condition of a dielectric liquid in an electrical apparatus, the electrical apparatus having an outlet and an inlet for allowing said liquid to pass out of and into said apparatus respectively, said device comprising in combination with said dielectric liquid containing electrical apparatus: cylinder means; closable liquid inlet valve means of said cylinder means, said liquid inlet valve means being connectable to said outlet of said electrical apparatus for letting in dielectric liquid from said electrical apparatus into said cylinder means; closable liquid outlet valve means of said cylinder means, said liquid outlet valve means being connectable to said inlet of the electrical apparatus for returning dielectric liquid from said cylinder means to the electrical apparatus; closable gas outlet valve means of said cylinder means; gas analyzer means connected to said closable gas outlet valve means; piston means operating within said cylinder means for selectively causing one of pressurization and vacuum within said cylinder means, so that when said closable gas outlet valve is closed, said piston means operates to cause said dielectric liquid to flow to and from said cylinder means to said electrical apparatus in a closed circuit through said liquid outlet valve means and said liquid inlet valve means and when said closable liquid outlet valve means said liquid inlet valve means and said gas outlet vavle means are closed in a state wherein a sample of dielectric liquid from said electrical apparatus remains in said cylinder means, said operating piston means causes vacuum in said cylinder means during an outward stroke thereof, thereby liberating dissolved gases from said sample of dielectric liquid said gas outlet valve means being opened to allow said liberated gases to be conveyed therethrough for analysis of composition in said gas analyzer during an inward stroke of said piston means.

3,844,161
FLUIDIC PROXIMITY SENSING DEVICES

Francis Xavier Kay, Winslow, England, assignor to Instruments and Movements Limited, London, England

Filed June 21, 1972, Ser. No. 264,943
Claims priority, application Great Britain, June 22, 1971, 29237/71
Int. Cl. G01b 13/12
U.S. Cl. 73—37.5 10 Claims



1. A fluidic device for sensing proximity to an object, comprising:

a. receiver means comprising

a receiver passage,

a receiver orifice in communication with the receiver passage such that changes in pressure at the receiver orifice induce corresponding pressure changes in the receiver passage, and

a sensing fluid passage, intersecting the receiver passage in a manner which divides the sensing fluid pasage into an upstream limb and a downstream limb which limbs are aligned in the sense that the respective openings into the receiver passage face one another so that in the absence of any pressure changes in the receiver passage induced by pressure changes at the receiver orifice sensing fluid flowing out of the upstream limb traverses the receiver passage to impinge directly on the opening of the downstream limb; and

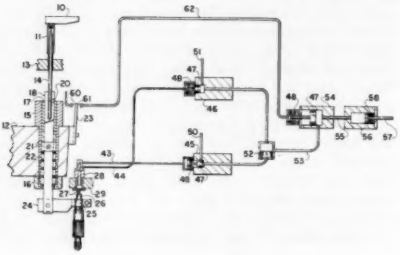
b. transmitter means, proximate the receiver orifice adapted for projecting a pressure fluid jet in a predetermined direction toward the object, which pressure fluid jet is

deflected by the object and produces a pressure change at the receiver orifice, and a corresponding pressure change in the receiver passage, so as to disturb the flow of the sensing fluid stream traversing the receiving passage.

3,844,162
INSPECTION APPARATUS

Charles D. Picozzi, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 1, 1972, Ser. No. 276,996
Int. Cl. G01b 13/14
U.S. Cl. 73—37.5 **5 Claims**



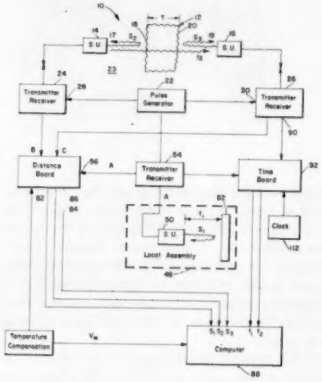
1. A cartridge case inspection arrangement comprising,
a machine having a fixed stop plate and bottom rail between which an inverted cartridge case may be suspended and a ram member mounted for vertical movement relative to said stop plate,
vertically apertured guide means carried by said ram and slidably receiving a vertically oriented shaft,
a spring within said guide means and biasing said shaft upwardly,
a detect stem secured to an upper portion of said shaft and adapted to enter the mouth of said inverted cartridge case,
an adaptor secured to a lower portion of said shaft and carrying an adjustable micrometer head, said micrometer head having a vertically adjustable upper end,
a transducer head having a body containing a pair of air cross jets and a downwardly biased probe slidably mounted in said body adjacent to and vertically aligned with said micrometer head, said probe having an upper blade portion adapted to sequentially alter fluid communication across said cross jets, and
fluid operated means controlled by said blade for indicating predetermined vertical positions of said detect stem.

3,844,163
ULTRASONIC VELOCITY METER

Christopher Di Leo, Brewster, N.Y., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Apr. 17, 1973, Ser. No. 351,812
Int. Cl. G01n 9/24; G01h 5/00
U.S. Cl. 73—67.5 R **20 Claims**

1. The combination of:
a pair of ultrasonic search units for transmitting ultrasonic energy into a workpiece, said pair of ultrasonic search units being effective to receive said energy from said workpiece and to produce signals corresponding thereto,
a third ulstrasonic search ubit for transmitting pulses of ultrasonic energy toward a reflector and receiving echoes of said pulses from said reflector, said reflector being separated from said third search unit by approximately a predetermined distance whereby said echo is delayed by a standard reference time,
receiving means coupled to said ultrasonic units and effective to produce signals corresponding to the ultrasonic energy passing through the opposite sides of said workpiece,
distance means responsive to said receiving means and effective to produce a pair of signals each corresponding to the distance between one of said pair of search units and the associated adjacent side of said workpiece, said distance means being further coupled to said third search unit for generating a signal corresponding to said predetermined distance,

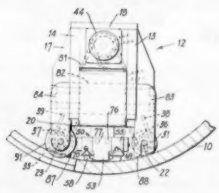


timing means responsive to said receiving means and effective to produce a signal corresponding to the time required for said ultrasonic energy to be transmitted between said pair of ultrasonic search units with said workpice positioned therebetween, said timing means being further coupled to said third search unit for generating a signal corresponding to said standard reference time, and means responsive to said distance means and said timing means for producing a velocity signal indicative of the velocity of propagation through said workpiece.

3,844,164
END AREA INSPECTION TOOL FOR AUTOMATED NONDESTRUCTIVE INSPECTION

John M. Romere, Houston, Tex., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 3, 1973, Ser. No. 402,989
Int. Cl. G01n 29/04
U.S. Cl. 73—67.8 S **10 Claims**



1. In nondestructive inspection apparatus for inspecting the end region of a ferromagnetic member, the combination comprising
a housing unit,
wheels on said housing unit for supporting it on a surface of the member in a freestanding manner,

motor drive means on the housing unit for moving the housing unit on its wheels along said surface,

nondestructive inspection apparatus carried by the housing unit for inspecting the member as the unit moves relative thereto,

magnet means on the housing unit for establishing a magnetic circuit with said member and producing an attractive force sufficient in magnitude to maintain said wheels in contact with said member as the unit moves along said surface, and

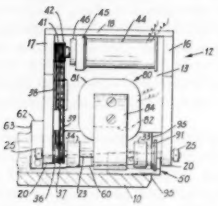
means on said housing unit for maintaining said housing unit in a desired path relative to the end region of the member as the unit moves along the surface of the member.

3,844,165

END AREA INSPECTION TOOL FOR AUTOMATED NONDESTRUCTIVE INSPECTION

Donald Edward Savoy, Lake Charles, La., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,061
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **5 Claims**



1. In nondestructive inspection apparatus for inspecting the end region of a ferromagnetic member wherein the apparatus includes a freestanding housing unit having driven wheels or rollers thereon for supporting and moving the unit on the surface of the member, the unit including nondestructive inspection means and magnet means on the unit for establishing a magnetic circuit with the member to produce an attractive force therebetween which is sufficient in magnitude to maintain the wheels or rollers on the surface irrespective of the disposition of the housing unit, and wherein means are included on the housing unit for moving it along a desired path a fixed distance from an end of the member, an improvement in said last named means comprising,

an axle on which at least one of said rollers or wheels is supported,

said axle being obliquely inclined with respect to a line that is normal to said desired path, whereby rotation of said one roller or wheel in a given direction creates a force tending to move the housing unit away from said end, and said housing unit including follower means engaging said end of the member for resisting said force and maintaining the housing unit on the desired path.

3,844,166

METHOD AND DEVICE FOR THE MEASUREMENT OF THICKNESS BY ULTRASONIC RESONANCE

Jean-Claude Carossi, Manosque, and Pierre Fierard, Aix-en-Provence, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 23, 1973, Ser. No. 326,069
Claims priority, application France, Feb. 3, 1972, 72.03612
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **12 Claims**

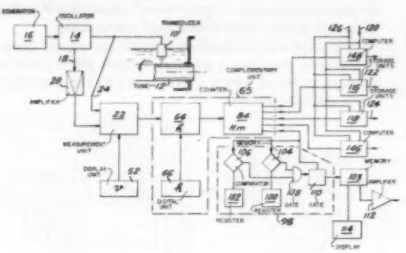
1. A method for measuring the thickness of an object with the aid of the resonant frequency of the object determined by a frequency scan of frequency-modulated ultrasonic waves, comprising the steps of:

generating ultrasonic oscillations;

frequency modulating said ultrasonic oscillations in accordance with a sinusoidal law;

directing said ultrasonic oscillations at said object;

measuring the time-duration, τ, of a predetermined number, N_n, of periods of said ultrasonic oscillations starting from



the occurrence of the resonant frequency of said object; and

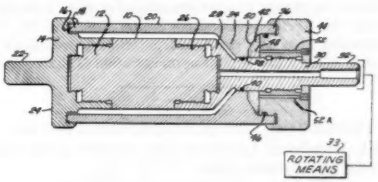
measuring the time-duration, τ', of a predetermined number, $N_{n'}$, of periods of said ultrasonic oscillations starting at least from the end of the N_n periods whereby the resonant frequency of said object free of the predominant error term arising from the frequency scan is obtained from τ and τ'

3,844,167

TRIAXIAL TENSILE STRESS DEVICE

Jerome C. Schutzler, Irvine, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Sept. 4, 1973, Ser. No. 393,707
Int. Cl. G01n *3/00*
U.S. Cl. 73—93 **9 Claims**



1. A triaxial tensile stress device for applying axial, radial and circumferential stresses to a solid cylindrical billet comprising:

a first end cap with an axially positioned stem,

a second end cap with an axially positioned stem,

means fastening a solid cylindrical billet between said caps to apply axial tensile stress to said billet when said caps are moved further apart,

means rotating said caps and billet about an axis defined by said stems to apply radial and circumferential stresses to said billet, and

conversion means for applying separation forces between said caps as said caps are rotated.

3,844,168

TORQUE MEASURING APPARATUS

Robert Henry Tenkman, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

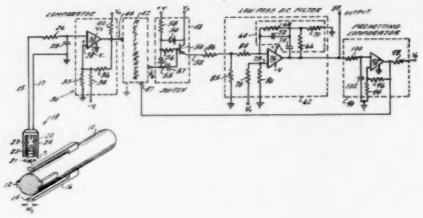
Filed Aug. 3, 1973, Ser. No. 385,463
Int. Cl. G01l *3/10*
U.S. Cl. 73—136 A **10 Claims**

1. A torque measuring apparatus comprising:

a torque shaft having a plurality of circumferentially spaced apart teeth disposed about the surface thereof with adjacent teeth in fixed axially displaced connection to the shaft such that the application of torque to the shaft operates to twist the shaft and change the spacing between adjacent teeth;

a sensor stationed in fixed spaced apart relation to the shaft to provide an output signal waveform indicative of each time one of the teeth rotate past the sensor;

a comparator which receives the output signal from the sensor and provides a primary output pulse train, each primary pulse of which corresponds to the rotation of a tooth past the sensor;



a bi-stable multivibrator which receives the primary pulse train from the comparator and changes state between a high and low output signal upon receipt of each primary pulse from the primary pulse train;

a DC filter which receives the output signal from the multivibrator and provides an average DC output signal which is an analog indication of the actual torque applied to the shaft;

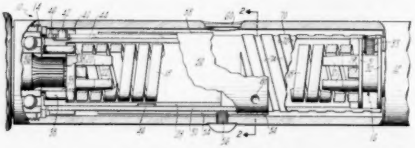
and a presetting comparator which receives the output signal from the DC filter and provides a preset input signal back to the multivibrator interrupting the primary pulse train to the multivibrator and causing the multivibrator to change to a predetermined state so as to assure that the average DC output signal from the DC filter remains at a predetermined polarity regardless of the state of the multivibrator upon initiation of shaft rotation.

3,844,169

POWER TOOL TORQUE INDICATING DEVICE

Hugh L. Whitehouse, Lyndhurst, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed Apr. 18, 1973, Ser. No. 352,109
Int. Cl. G01l *3/04*, *5/24*
U.S. Cl. 73—136 A **9 Claims**



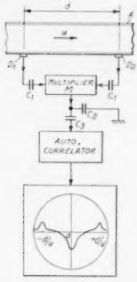
1. In a power tool having a rotary drive mechanism with generally coaxial rotary drive and driven members and intermediate torque transmitting means interconnecting the rotary drive and driven members and permitting relative angular displacement thereof in accordance with the torque being transmitted therethrough, a torque indicating device comprising torque indicating means operable for indicating torque, a torque indicator operator for operating the indicating means, the torque indicator operator being reciprocably mounted in association with the drive mechanism for movement in one direction for increasing the torque indication and for movement in the opposite direction for decreasing the torque indication, first actuator means for actuating the torque indicator operator in said one direction in accordance with said relative angular displacement of the rotary drive and driven members for indicating the torque transmitted through the drive mechanism, and second actuator means operable by the rotation of one of the rotary members for actuating the torque indicator operator in the opposite direction when the indicated torque is greater than the transmitted torque.

3,844,170

FLOW VELOCITY MEASUREMENT

Donald Louis Critten, Biscot Rd., Luton, England

Filed Jan. 26, 1973, Ser. No. 326,720
Claims priority, application Great Britain, Jan. 27, 1972, 3942/72
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 E **12 Claims**



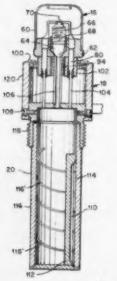
1. A method of detecting the velocity of a flow which comprises deriving from each of a first pair of positions spaced apart in the direction of flow a signal corresponding to radiative noise in the flowing system, multiplying said signals together and auto-correlating the product.

3,844,171

LIGHT GUIDE LIQUID LEVEL INDICATOR

Erwin S. Rodger, 41 Maple Ave., Locust Valley, N.Y. 11560

Filed Dec. 29, 1971, Ser. No. 213,589
Int. Cl. G01f *23/02*
U.S. Cl. 73—293 **13 Claims**



1. A liquid level indicating device, including probe means capable of being inserted into a container holding a liquid, and readout means external from and coupled to said probe means, said probe means comprising:

prism means having first and second elongated faces and a base;

support means defined by a hollow tube including an outer wall and having a longitudinally extending notch in its wall, said notch extending through substantially the entire length of the tube, and wherein said prism means is positioned within said tube such that the apex formed at the junction of said first and second faces outwardly abuts said notch;

a first plurality of elongated transilluminators secured to said support means in longitudinally spaced relation with each other, said first plurality of transilluminators having their originating ends arranged to the illuminated by a source of light and their terminating ends adjacent to but spaced from said first face of said prism, said first plurality of transilluminators each being positioned on said support means to focus the light transmitted therethrough onto the surface of said first face along a line substantially parallel with said base;

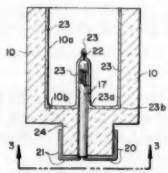
a second plurality of transilluminators secured to said support means in longitudinal spaced relation with each other, said second plurality of transilluminators having their originating ends adjacent to but spaced from said second face of said prism and generally in opposition to said terminating ends of said first plurality of transilluminators, said second plurality of transilluminators being positioned on said support means to receive light transmitted through said second face of said prism and having their terminating ends coupled to said readout means; and

said readout means comprising illuminating means coupled to said terminating ends of said second plurality of transilluminators for providing an optical display output of illuminated terminating ends, wherein light is transmitted through said second face on that portion of said prism means which is inserted within the liquid thereby providing an optical display output, and wherein light is not transmitted through said second face of that portion of said prism means which is not within the liquid thereby not providing an optical display output.

3,844,172
THERMOCOUPLE TEST CUP AND CUPHOLDER

Joseph M. Jeric, 104 Maple Hill Dr., South Russell, Ohio 44022

Filed Jan. 14, 1972, Ser. No. 217,731
Int. Cl. G01k *13/12*
U.S. Cl. 73—354 **7 Claims**



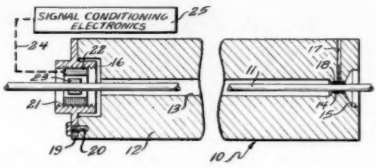
1. The process for providing a coating on the inside of a thermocouple test cup and on a thermocouple sensing means extending thereinto comprising the steps of

1. filling the cup with an aqueous slurry of a particulate refractory material,
2. inverting the cup and allowing the slurry to drain for a time sufficient to form a continuous, smooth, break-free, integral layer of coating over the entire inside surface of the cup and the surface of the thermocouple sensing means,
3. setting the cup upright while said coating still retains an ability to flour, and
4. allowing the coating to dry.

3,844,173
METHOD AND APPARATUS FOR MEASURING PRESSURES IN FLUID LINES

Raymond H. Rockstead, Livermore, and Richard T. Hasbrouck, Danville, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 19, 1973, Ser. No. 352,812
Int. Cl. G01l *9/10*
U.S. Cl. 73—398 R **15 Claims**

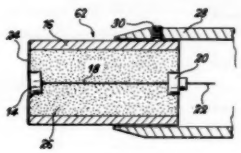


1. A method for measuring pressures in fluid lines without tapping, restricting, or modifying the interior of the lines or fluid therein comprising the steps of: providing a fluid line with means for determining the elongation of the fluid line resulting from fluid pressure therein, monitoring the linear elongation of the fluid line, and translating the elongation of the fluid line into a pressure reading.

3,844,174
METHOD AND DEVICE FOR THE RAPID MEASUREMENT OF THE MASS AND CONCENTRATION OF PARTICLES

Andre Paul Chabre, Zup, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 12, 1972, Ser. No. 296,944
Claims priority, application France, Oct. 18, 1971, 71.37298
Int. Cl. G01n *15/00*
U.S. Cl. 73—432 PS **11 Claims**



1. A method of measuring the mass and concentration of particles contained in a fluid, comprising the steps of causing a fluid containing particles to collide with the face of a piezoelectric detector at an oblique angle of incidence by moving said detector at a predetermined speed and with a predetermined inclination of the face thereof with respect to the direction of movement, determining the relative velocity of said particles with respect to said detector, measuring the amplitude and number of electrical signals produced by said detector under the impact of said particles to provide an indication of the masses and concentration of said particles.

3,844,175
NOISE SOURCE LEVEL DETECTION

Elmer L. Hixson, 3103 White Roller Dr., Austin, Tex. 78731

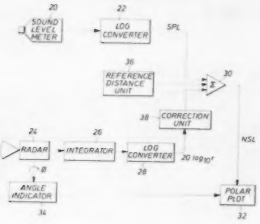
Filed Feb. 26, 1973, Ser. No. 336,051
Int. Cl. G01h *3/12*
U.S. Cl. 73/557 **10 Claims**

1. The method of measuring noise from a moving vehicle, comprising the steps of:

detecting at a measuring point with a sound level measurer the noise emanating from a vehicle moving along a straight path a known distance from said point;

logarithmically converting the detected sound level to decibels referred to 2×10^{-5} newtons/meter^2;

detecting at the measuring point with doppler radar means the timing of doppler returns from said vehicle and calculating from the known distance of said path to said point the range of said point to vehicle during the sound level detection;



logarithmically converting the range information as follows: $20\log_{10}r$, where r equals range in meters; and

adding the logarithmically converted detected sound level to the logarithmically converted range to produce a noise source level.

3,844,176

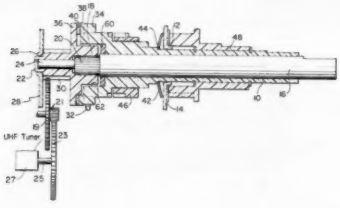
SHAFT MOUNTING ARRANGEMENT FOR UHF TUNERS

Alarico A. Valdettaro, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed May 24, 1973, Ser. No. 363,588

Int. Cl. F16h *35/18*; **H03j** *1/12*, *1/14*

U.S. Cl. 74—10.41 **5 Claims**



1. The combination of, a UHF tuner having a continuously variable main tuning shaft rotation of which is effective selectively to receive signals from all television stations in the UHF television band, a selector shaft, a detent wheel secured to said selector shaft and having indentations in the periphery thereof, spring biased detent means adapted to engage the indentations of said wheel as said selector shaft is rotated thereby to establish different equally spaced detent positions for said selector shaft, a fine tuning shaft positioned inside said selector shaft, a first gear secured to and rotatable with said fine tuning shaft, means including gear means for interconnecting said first gear and said main tuning shaft, a first clutch plate secured to and rotatable with said fine tuning shaft and having a first annular surface, a second clutch plate secured to and rotatable with said selector shaft and having a second annular surface in alignment with said first surface, a clutch pad positioned between said first and second annular surfaces, means for exerting a force along the axes of said shafts tending to bias said annular surfaces into engagement with opposite sides of said clutch pad, said detent means exerting a side thrust on said selector shaft which tends to misalign said selector shaft with respect to said fine tuning shaft and produce undesired relative movement between said first and second surfaces as said selector shaft is rotated, and means for positively preventing misalignment of said selector shaft relative to said fine tuning shaft due to said side thrust while permitting rotation of said fine tuning shaft independently of said selector shaft when said selected shaft is restrained by said detent means.

3,844,177

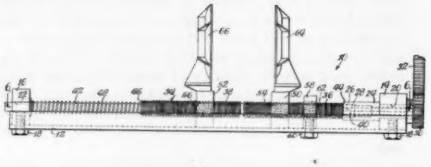
AXIALLY ADJUSTABLE POSITIONING MEANS

Hugh Bourassa, Cleveland, Ohio, assignor to National-Standard Company, Niles, Mich.

Filed Feb. 16, 1973, Ser. No. 333,027

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **6 Claims**



1. Axially adjustable positioning means comprising an elongated shaft formed with a right-hand thread section and a left-hand thread section and having a normal axial operating position, support means mounting said shaft for rotation and axial movement, biasing means for biasing said shaft axially to said normal axial operating position, a first axially movable member having threaded engagement with one of said thread sections, a second axially movable member having threaded engagement with the other of said thread sections, stationary stop means adjacent said one thread section, said shaft upon rotation when in said normal axial operating position effecting movement in opposite directions of each of said first and second axially movable members with respect to said support means through a given distance per revolution of said shaft, and said shaft upon rotation as and when said first axially movable member abuts said stop means and as and when said shaft is thereby axially displaced from said normal axial operating position effecting movement of said second axially movable member with respect to said support means through a distance twice said given distance per revolution of said shaft.

3,844,178

STEPPING MOTOR OF THE FLUID PRESSURE TYPE

Jean Gachot, 179 Avenue de la Division Leclerc, Enghien-les-Bains, and Simeon Lekarski, 138 Boulevard de la Republique, Saint-Cloud, both of France

Filed June 2, 1972, Ser. No. 259,033

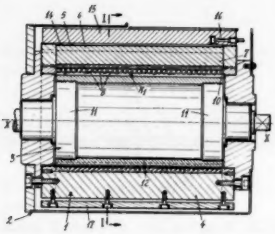
Claims priority, application France, June 3, 1971, 71.20155; May 3, 1972, 72.15665

Int. Cl. F16h *27/00*; **F01b** *13/00*

U.S. Cl. 74—128 **6 Claims**

1. A stepping motor comprising two members capable of moving with respect with each other, one of said members having cage means retaining a plurality of successive rows of rolling elements that engage in successive depressions in the other member, and fluid pressure actuating means for each said row to selectively press only one row of said successive rolling elements to the bottom of one of said depressions at one time, one row (R1) being at the bottom of one said depression (13) at one time, and each of the other successive rows (R2–R8) of rolling elements (8) being offset with respect to each of the corresponding successive depressions (13) by

a distance which is equal to the pitch of the depressions (13) divided by the total number of said rows (R1–R8) of rolling



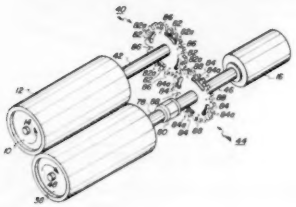
elements (8), whereby only one said actuating means moves said members relative to each other through a said distance at one time.

3,844,179

GEAR DRIVE FOR ELECTROPHOTOGRAPHIC PRINTING MACHINE

Charles V. Hawley, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 14, 1973, Ser. No. 370,181
Int. Cl. F16h *55/18*
U.S. Cl. 74—409 **8 Claims**



1. An apparatus rotating a first shaft member at a substantially predetermined angular velocity relative to a second shaft member with substantially no relative movement therebetween, including:

a first gear member mounted on the first shaft member, said first gear member having a plurality of resilient portions equally spaced between substantially rigid portions at substantially about a pre-selected radius thereon; and

a second gear member mounted on the second shaft member and meshing with said first gear member in a contact zone, said second gear member having a plurality of resilient portions equally spaced between substantially rigid portions and at substantially about a pre-selected radius thereon, said first gear member being adapted to mesh with said second gear member such that each of the resilient portions of said first gear member pass through the contact zone when each of the rigid portions of said second gear member pass therethrough.

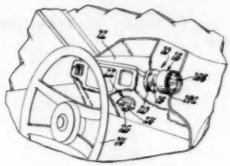
3,844,180

CONTROL MECHANISM

Richard D. Williams, Fairport, and Fred G. Michaels, Pittsford, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1973, Ser. No. 325,325
Int. Cl. G05g *9/00*
U.S. Cl. 74—473 R **14 Claims**

1. A control mechanism comprising a bracket member, first and second pulleys rotatably mounted on said bracket member, a control knob operatively connected to one of said pulleys and manually rotatable into a plurality of predetermined circumferential positions, an endless flexible belt mounted around said first and second pulleys, a bellcrank lever having one end thereof pivotally connected to said flexible belt, first, second, and third slots formed in said bracket member, first, second, and third pivot pin members slidably mounted in said first, second, and third slots, respectively, said first and second pivot pin members being secured to said bellcrank lever, a slot formed in the other end of said bell-



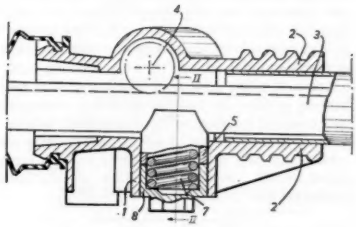
crank lever, said third pivot pin member being slidably mounted in said bellcrank lever slot, connecting means connected at one end thereof to said third pivot pin member and at the other end thereof to a device to be controlled, the movement of said second pivot pin member along said second slot in response to manual movement of said control knob serving to control the angular relationship of said bellcrank lever between said flexible belt and said connecting means and thereby moving said third pivot pin member into predetermined positions along said third slot corresponding to said predetermined circumferential positions of said control knob.

3,844,181

RACK AND PINION ASSEMBLY

Robert Vincent Bayle, Ecquevilly, Yvelines, France, assignor to Gemmer France, Suresnes, Hauts-de-Seine, France

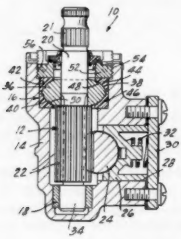
Filed Apr. 4, 1973, Ser. No. 347,889
Claims priority, application France, Apr. 10, 1972, 72.12515
Int. Cl. F16h *1/04*; B62d *1/20*
U.S. Cl. 74—498 **11 Claims**



1. A rack and pinion assembly comprising a housing, a pinion gear rotatably mounted in said housing, a rack bar extending through said housing in meshing engagement with said pinion gear and adapted to be reciprocally driven thereby, an elastically deformable bearing located opposite said pinion gear and supporting said rack bar, spring means urging said bearing into engagement with said rack bar with a force normally maintaining said rack bar in meshing engagement with said pinion gear, said housing having a generally cylindrical bore slidably supporting said bearing, and said bearing having alternate portions with dimensions greater and lesser than the diameter of said bore with the greater portions radially elastically deformed into frictional engagement with the wall of the bore, permitting movement thereof towards the

rack bar under the influence of the spring and frictionally dampening movement away from the rack bar under loads applied thereto by the rack bar.

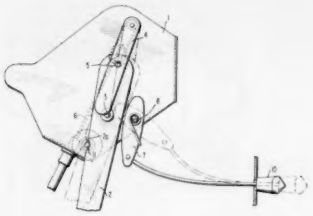
3,844,182
RACK AND PINION ASSEMBLIES
Kenneth Bradshaw, Yatton, and James Ernest Buckingham, Portishead, both of England, assignors to Cam Gears Limited, Hitchin, Hertfordshire, England
Filed May 4, 1973, Ser. No. 357,371
Claims priority, application Great Britain, Aug. 22, 1972, 39106/72
Int. Cl. B62d 1/20; F16h 1/04
U.S. Cl. 74—498 **29 Claims**



1. A rack and pinion assembly, comprising:
housing means;
pinion means rotatably mounted in said housing means and including a shaft adapted to receive rotational forces, and a pinion carried on said shaft for rotation therewith;
a rack extending through said housing means transversely of the axis of rotation of said pinion, said rack meshed with said pinion and mounted for longitudinal movement in response to rotation of said pinion; and
bearing means mounting said pinion means in said housing means to resist radial and axial movement of said pinion, said bearing means including a ring-shaped first bearing element having a convex bearing surface which is at least part spherical, and ring-shaped second and third bearing elements each having a concave bearing surface which is at least part spherical and with the other concave surface is complemental to said convex bearing surface, said bearing elements co-axially oriented so that said convex bearing surface is received in sliding engagement with said concave bearing surfaces, said first bearing element secured to and carried by one of said housing and pinion means and said second and third bearing elements secured to and carried by the other of said housing and pinion means.

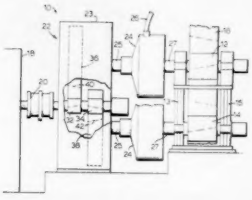
3,844,183
DETENT ASSEMBLY FOR A VEHICLE EMERGENCY BRAKE ACTUATING MECHANISM
David J. Wilke, York, Pa., assignor to Pennsylvania Wire Rope Corporation, Williamsport, Pa.
Filed June 6, 1973, Ser. No. 367,543
Int. Cl. G05g 1/04
U.S. Cl. 74—517 **9 Claims**

1. In a vehicle emergency brake actuating mechanism of the type including a foot pedal lever, a brake actuating cable and an over-center type toggle linkage operatively connected between the foot pedal lever and the brake actuating cable, the improvement comprising detent means disposed in proximity to the path of the toggle linkage, and actuator means operatively connected to said detent means for moving the detent means into and out of the path of the toggle linkage whereby when the detent means is disposed in the path of the toggle linkage the toggle linkage is prevented from moving to



the over-center locked position, and when the detent means is disposed out of the path of the toggle linkage, the toggle linkage is movable to the over-center lock position.

3,844,184
LOAD EQUALIZED TRANSMISSION
John Edward Nelson, Montreal, and Norman Astor Stock, Beaconfield, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada
Filed May 21, 1973, Ser. No. 362,084
Int. Cl. F16h 37/06
U.S. Cl. 74—665 GA **7 Claims**



1. A method of starting a high inertia system having a low speed rotary load driven by a high speed low torque prime mover through speed reduction gearing, including a first speed reduction gearbox having a twin output concurrently connectible by respective slip clutches in torque transmitting relation with a pair of pinions mounted in driving relation with a large gear attached to the load, including the steps of starting and accelerating the prime mover and the reduction gearbox to a desired speed, coupling the twin output clutches concurrently between the gearbox and the load, limiting the coupling torque to a predetermined function of full load torque, and bringing the load to the desired speed, whereby the kinetic energy of the moving portion of the system prior to the coupling step includes the energy of rotation of the first speed reduction gearbox.

3,844,185
BACK LASH REMOVAL TOOL
Thomas W. Watson, Houston, Tex., assignor to Zodell W. Prince, a part interest
Filed July 27, 1972, Ser. No. 275,767
Int. Cl. B25b 27/00
U.S. Cl. 81—3 R **4 Claims**

1. A back-lash removal tool comprising an elongated shank having a handle on one end and being pointed on the other, a notch in said shank and a slidable locking means on said

shank adapted to be moved over said notch, a stop means on said shank limiting the sliding movement of said locking

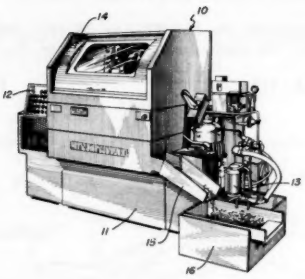
means and a notch in said shank out of longitudinal alignment with said first mentioned notch, adjacent said pointed end.

3,844,186

MACHINE TOOL

David H. Youden, Reston, Va., and Arthur F. St. Andre, Marlboro, Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Dec. 7, 1972, Ser. No. 312,852
Int. Cl. B23b *3/20*
U.S. Cl. 82—2 R **10 Claims**



1. A machine tool, comprising
a. a toolhead,
b. a table including deflectable elements for holding the toolhead,
c. a workhead,
d. a base including deflectable elements for holding the workhead,
e. means including a hydrostatic bearing for connecting the table and the base for relative sliding motion therebetween, the toolhead, the table with its deflectable elements, the workhead, and the base with its deflectable elements forming a force loop within which is distributed the working force due to the engagement between a tool carried in the toolhead and a workpiece carried in the workhead, the hydrostatic bearing including means to cause it to act as a negative spring so that positive force increments bring about reduced increments of deflection.

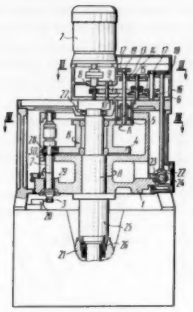
3,844,187

MULTISPINDLE AUTOMATIC MACHINE

Grigor Arutjunovich Shaumian, Ananevsky pereulok, 5, kv. 63, Moscow, U.S.S.R.

Filed June 21, 1973, Ser. No. 372,414
Int. Cl. B23b *3/34*
U.S. Cl. 82—3 **2 Claims**

1. In a multispindle automatic machine for machining workpieces shaped as solids of revolution, comprising in a combination: a bed; a rotor with work spindles; cutting tool made as gang tools located on said bed round said rotor and fixed in position; a main cutting motion drive imparting rotation at a cutting speed to said work spindles via a central gear wheel; a means for loading workpieces and unloading finished parts; a rotative drive for said rotor carrying said work spindles to receive circular feed motion, said drive comprising a self-braking single worm gear having a worm wheel positively locked-in with said rotor, and a worm kinematically associated with said central gear wheel in such a way that, whatever the direction of rotation of said rotor the tooth contact in said



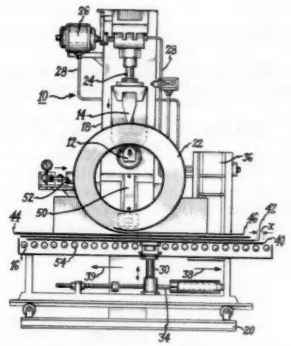
single-worm gear remains unaffected, thus establishing high rigidity of the system "tool-spindle-rotor" in the cutting process.

3,844,188

APPARATUS FOR PROVIDING STAGGERED JOINT, SINGLE TURN, CUT CORE LAMINATIONS

Larry D. Williams, Taylorsville, N.C., assignor to General Electric Company

Division of Ser. No. 305,795, Nov. 13, 1972, Pat. No. 3,818,587. This application Feb. 20, 1974, Ser. No. 444,112
Int. Cl. B26d *7/06*
U.S. Cl. 83—91 **2 Claims**

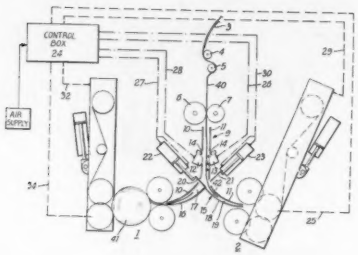


1. An apparatus for cutting and staggering single turn laminations comprising; an arbor for holding a roll of core steel, a blade movable toward said arbor for cutting said roll of core steel into a plurality of single turn laminations and a movable table, movable beneath said arbor for catching said plurality of single turn laminations, and means for controlling the speed of said blade and said table to provide a predetermined offset between the ends of each of said plurality of single turn laminations.

3,844,189
WEB FEEDING APPARATUS

Robert W. Jardine, Stockport, England, assignor to Reed International Limited, London, England

Filed May 15, 1973, Ser. No. 360,494
Int. Cl. B26d *7/06;* **B65h** *17/32*
U.S. Cl. 83—98 **4 Claims**

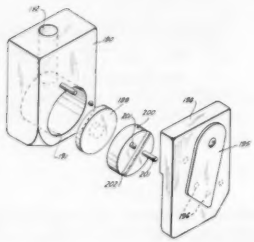


1. Web feeding apparatus including a web diverting device which is controllable to cause a free leading end of a web to take a selected one of two alternative paths, the web diverting device comprising a pair of facing surfaces which diverge from each other in the web feeding direction whereby each defines a respective one of the two alternative paths, the facing surfaces of the diverting device extending substantially parallel to each other for a length before they commence to diverge, and means for directing a flow of air over either one of said surfaces as selected in the direction of web feed, whereby the free leading end of a web passing between the facing surfaces is drawn to the one of the surfaces over which the flow of air is directed, the means for directing the flow of air over the facing surfaces comprising air feed devices respectively disposed in each of said facing surfaces part way along their substantially parallel portions, and web severing means positioned to sever the web substantially at the commencement of the divergence of said facing surfaces.

3,844,190
CUTTER FOR USE IN AUTOMATIC YARN TRANSFER SYSTEM

Harry B. Miller, Hopedale, Mass., assignor to Industrie Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany

Filed May 25, 1973, Ser. No. 364,106
Int. Cl. D01g *1/04*
U.S. Cl. 83—395 **7 Claims**

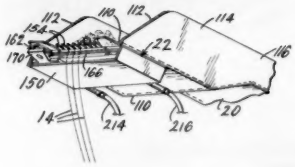


1. A cutter for yarn and like filamentary material, comprising a housing having a chamber provided with an open side; a movable member tightly but slidably accommodated in said chamber and having a surface facing outwardly of said open side; an anvil member mounted on said housing and extending across said open side spaced therefrom by a distance sufficient to permit admission of a filamentary element between said movable member and said anvil member; a raised cutting edge provided on one of said members; a fluid inlet communicating with said chamber inwardly of said movable member for admission of pressure fluid serving to rapidly displace said movable member towards said anvil member so that said cutting edge will sever an admitted filamentary element by cooperation of said movable member with said anvil member; resilient means resiliently urging said movable member inwardly of said open side; and locating means on one of said members for locating an admitted filamentary element in direction transverse to said cutting edge, comprising abutment means at opposite sides of said cutting edge and positioned on a line extending transverse thereof, said abutment means projecting beyond said cutting edge so as to intercept and locate the admitted filamentary element.

3,844,191
APPARATUS FOR SEVERING LINEAR ELEMENTS

James H. Sears, and Paul M. Vucish, both of Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 284,298, Aug. 28, 1972, Pat. No. 3,771,981. This application June 7, 1973, Ser. No. 367,924
Int. Cl. B26d *1/20*
U.S. Cl. 83—420 **13 Claims**



1. Strand severing apparatus comprising:
a strand severance backing surface;
at least two side-by-side spaced apart members projecting in a direction outwardly of the strand severance backing surface forming spaces between them through which strand can extend;
a blade mounted for movement transversely of the members with its cutting edge in strand severing relationship with the strand severance backing surface; and
means for moving the blade to bring the cutting edge into severing engagement with strand against the backing surface for severance of strand extended through the space across the path of the member at the surface, the members being sufficiently close to the path of the blade to limit the lateral movement of strand in the zone of engagement with the member to promote strand severance.

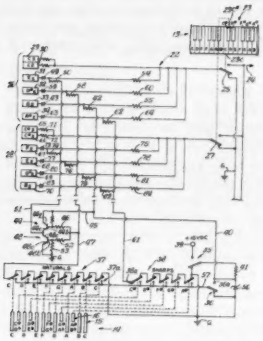
3,844,192
CHORD CONTROL SYSTEM FOR ELECTRONIC ORGAN

John R. Brand, Mount Prospect; Alden J. Carlson, Elgin, and Bert G. H. Penhollow, Niles, all of Ill., assignors to Warwick Electronics Inc., Chicago, Ill.

Filed May 4, 1973, Ser. No. 357,389
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **22 Claims**

1. In an electronic organ having a manual keyboard, and pedals a semiautomatic chord control system comprising: selector means for producing selectively either a single corresponding note or a first type of chord having said note as the root note thereof as a result of depression of any one of a set

of keys of the keyboard; and modifier means for changing at least one of the notes of said chord to another type of chord

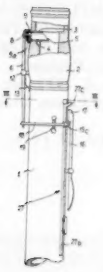


as a result of depression of a pedal with said selector means arranged to produce said chord.

3,844,193
CLARINET

Joseph Marchi, 9 rue Romain Rolland, Sete, France

Filed Dec. 13, 1973, Ser. No. 427,013
Claims priority, application France, Dec. 20, 1972, 72.45505
Int. Cl. G10v *7/06*
U.S. Cl. 84—382 **7 Claims**



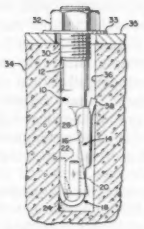
1. Clarinet comprising a lower body and an upper body, a barrel, and a mouthpiece fitted in said barrel, characterized in that it comprises in said barrel a pair of air outlet passages having different cross-sectional passage areas, adapted to produce the fifth harmonic sounds or the seventeenths of the fundamental sounds of the clarinet, and two keys carrying stop valves for selectively opening said air outlet passages, the existing so-called key of twelfth being actuated simultaneously to its open position.

3,844,194
WEDGE ANCHOR DEVICE

Ernest William Reinwall, Jr., McHenry, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Feb. 14, 1973, Ser. No. 332,456
Int. Cl. F16b *13/04*
U.S. Cl. 85—79 **5 Claims**

1. An expandable anchor assembly including a cylindrical shank member, one terminal portion of the shank being swaged to provide camming surfaces and a shoulder surface in one circumferential segment of the shank, the camming surfaces being inclined inwardly toward the shoulder surface from the extremity of the said one terminal portion, the camming surfaces comprising a pair of generally flat continuous coplanar surfaces extending from the extremity of the terminal portion to the shoulder, the surfaces being laterally separated by a rib extending from the shoulder toward the extremity of the terminal portion, a first longitudinal slot positioned between the camming surfaces and extending from the rib to the terminal extremity of the shank, a wedge member constructed of sheet spring-like material and having a generally arcuate cross-sectional configuration of generally constant thickness and including edge surfaces which slidably engage the camming surfaces of the shank, the extremity of the wedge member adjacent the shoulder surface including a spring-like barb portion extending radially outwardly of the assembly and adapted to aggressively impinge the wall of an associated hole



and resist withdrawal of the assembly from the hole, the circumference of the terminal portion of the anchor assembly, when the wedge is adjacent the shoulder, generally corresponding to the circumference of the cylindrical shank member, the wedge member including a generally U-shaped tail portion integral with the extremity of the wedge opposite the extremity which includes the barb portion, the shank further including a second longitudinally extending slot formed in the circumferential segment of the shank diametrically opposed to the first slot, the U-shaped tail thus being adapted to extend over the terminal edge of the shank and to aggressively engage both of said slots to retain the wedge member on the shank as well as preventing the lower extremity of the wedge from moving laterally of the shank portion wherein an anchored connection within a preformed hole of a size approximating the diameter of the cylindrical shank is provided and which insures substantially constant contact between the edge portions of the wedge and the camming surfaces of the shank while retaining and supporting the wedge throughout substantially its entire length from rotating or moving laterally relative to the shank.

3,844,195
PRODUCTS

James Byron Rhodes, Wilmington, and Joseph Robert Ruddy, Claymont, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

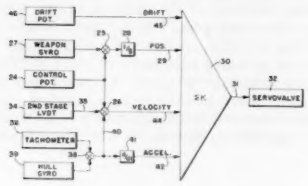
Filed May 26, 1972, Ser. No. 257,237
Int. Cl. F16j *15/22;* **D02g** *3/04;* **D04c** *1/06*
U.S. Cl. 87—1 **4 Claims**

1. A yarn consisting essentially of between about 65–75 percent by weight of polytetrafluoroethylene filaments and between about 35–25 percent by weight of aromatic polyamide filaments, based on the total weight of said filaments, said yarn containing a coating of finely divided polytetrafluoroethylene particles and additionally containing an outer coating of a polyorganosiloxane.

3,844,196
FIRE CONTROL SYSTEM

John E. Taylor, Kalamazoo, and Jack M. Brandstadter, Royal Oak, both of Mich., assignors to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Sept. 28, 1972, Ser. No. 292,934
Int. Cl. F41g 5/16
U.S. Cl. 89—41 CE 12 Claims



1. Apparatus for stabilization with respect to an inertial reference axis of a movable member mounted on supporting structure subject to random deviations from a predetermined aligned position comprising a rate gyro mounted on said movable member for developing electrical signals representative of the rate of movement of said member in the elevational plane, means for integrating the electrical signals of said rate gyro to develop position signals representative of the disposition of said element in the elevational plane with respect to an inertial axis of reference, a second rate gyro mounted on said supporting structure for developing electrical signals representative of the rate of movement of said structure in the elevational plane, a motor for imparting motion to said movable member in response to fluid flow at a rate proportional to a control signal, a tachometer coupled to said motor for providing electrical signals representative of the rate of rotation of same, means for differentially combining said tachometer signals and said second rate gyro signals to produce a resultant signal, means for differentiating said resultant signal to provide an acceleration signal, a servo valve for controlling fluid flow in response to electrical signals, a transducer coupled to the second stage of said servo valve to provide signals representative of the displacement of same, and means for combining said resultant signal, said transducer signal, said acceleration signal and said position signals to provide a combined signal for control of said servo valve.

3,844,197
HYDRAULIC MOTOR AND DRIVE ATTACHMENT

Stanley J. Kramer, Rd. No. 3, Geneva, Ohio 44041, and Edward J. Cebular, 5721 Meister Rd., Mentor, Ohio 44060

Filed Oct. 18, 1972, Ser. No. 298,594
Int. Cl. F01l 23/00
U.S. Cl. 91—52 5 Claims

1. A hydraulic motor comprising a tubular member having an inlet end and a center bore and having a plurality of axially extending bores extending into the wall of the tubular member from an inlet end thereof and terminating in communication with the center bore of the member, such member forming a pressure chamber,

a piston slidably received in said tubular member,

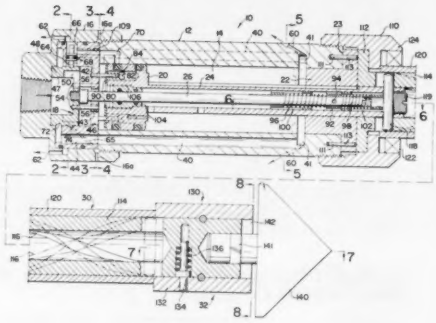
a tubular piston rod secured to said piston and protruding from the other end of the tubular member,

an inlet end cap secured to the inlet end of said tubular member,

valve means including an axially movable closure means received in said end cap and forming a closure for the inlet end of said pressure chamber, said valve means when open enabling water flow therethrough to drive said piston in one direction and when closed forcing water into said bores in said tubular member for flow to said chamber to force said piston in the opposite direction,

rod means slidably received in said piston rod and extending through said piston to engage said closure means to control its position and the action of said valve means dependent on the position of said piston in said chamber;

said valve means including an inner cup member, an outer cup member slidably receiving said inner cup member, said rod means engaging said inner cup member, and



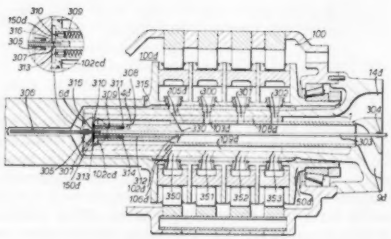
detents engaging said inner cup member to retain it in a valve open or a valve closed position; and

a check valve plate operatively engaging the downstream face of said outer cup member, and spring means engaging said check valve plate to urge it into engagement with said outer cup member for valve closing action.

3,844,198
HYDRAULIC MOTORS AND DRIVING SYSTEMS EMPLOYING SAME

Kenneth William Samuel Foster, Prestbury, and Duncan Kinloch Irons, Cheadle, both of England, assignors to Renold Limited, Manchester, England

Filed Dec. 8, 1972, Ser. No. 313,271
Claims priority, application Great Britain, Mar. 7, 1972, 10463/72
Int. Cl. F01b 13/06
U.S. Cl. 91—472 6 Claims



1. An hydraulic motor having:

a rotor comprising a plurality of rows of pistons and cylinders;

adjustable valve means for supplying fluid under pressure into the cylinders and for allowing the fluid to exhaust therefrom, thereby to drive the pistons and rotate the rotor, the valve means comprising a linearly displaceable valve member having a central longitudinal bore therein and which is selectively adjustable to communicate a pressure fluid inlet and an exhaust fluid outlet of the motor with different numbers of said rows of pistons and cylinders to provide for at least two different motor

speeds for a given delivery of working fluid to the motor; a control rod slideably received in said longitudinal bore and adjustable lengthwise with respect to the valve member and the motor casing, the control rod extending outside the motor casing at one end and extending through a first space defined between one end face of the valve member and the casing towards its other end; and

a non-return valve means communicating said space with said fluid pressure inlet;

the control rod having a radial bore presenting a mouth the effective uncovered area of which, open to said space is controlled by said valve member, said radial bore communicating said space with a pressure fluid zone at a pressure lower than the pressure of fluid in said fluid pressure inlet for the leakage of fluid from said first space at a rate greater than it is supplied through said non-return valve means, said valve member being subject to the pressure of fluid in said inlet on a face opposite to said one end face of the valve member of lesser area than said one end face, the valve member following-up movements of the control rod selectively to communicate said pressure fluid inlet and said exhaust fluid outlet with said different numbers of said rows of pistons and cylinders as the valve member moves in one direction to follow-up movements of said control rod.

3,844,199

APPARATUS FOR PRODUCING FILTER RODS OR THE LIKE

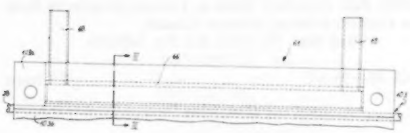
Hans-Jurgen Block; Heinz Greve, and Horst Zessin, all of Hamburg, Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Continuation-in-part of Ser. No. 181,996, Sept. 20, 1971, , which is a continuation-in-part of Ser. No. 861,829, Sept. 29, 1969, abandoned. This application May 17, 1972, Ser. No. 253,925

Claims priority, application Germany, Sept. 27, 1968, 1782651; Dec. 30, 1970, 2064536

Int. Cl. A24c *5/50*

U.S. Cl. 93—1 C **8 Claims**



1. Apparatus for producing a rod wherein a rod-like filler of fibrous or analogous material is confined in a web having overlapping marginal portions which are bonded to each other by at least one layer of adhesive, comprising a source of web; conveyor means for transporting the web lengthwise from said source along a predetermined path; means for feeding a continuous rod-like elastic filler into a first portion of said path; and converting means for draping successive increments of the web around successive increments of the filler in a second portion of said path so that the marginal portions of the thus draped web overlap and contact each other whereby the web is converted into a substantially cylindrical wrapper having a longitudinally extending seam and surrounding the filler in compacted condition of the filler, said converting means comprising guide means defining a passage for said tubular wrapper and including adhesive-influencing means engaging the seam of the wrapper in said passage, said guide means having a first surface bounding the major part of said passage and said adhesive-influencing means comprising a projection extending inwardly beyond said first surface and having a seam-engaging second surface of a width which is substantially equal to the width of the seam, said second surface being in contact with said wrapper only in the region of the seam and having a configuration to temporarily flatten the seam.

3,844,200

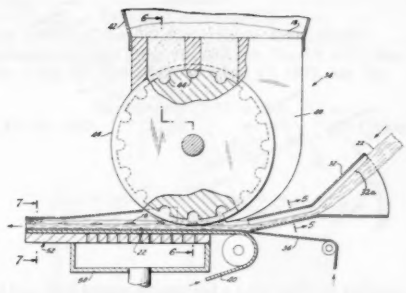
CONTINUOUS MANUFACTURE OF A MULTIPLE FILTER ROD HAVING SPACED POCKETS CONTAINING PARTICULATE MATERIAL

John H. Sexstone, Middletown, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed May 7, 1973, Ser. No. 358,126

Int. Cl. A24c *5/50*

U.S. Cl. 93—1 C **11 Claims**



1. A method of manufacturing multiple tobacco smoke filters comprising the steps of:

a. providing a web of filter material, said web having an elongated axis and being continuous in the direction of said axis;

b. continuously feeding the web in the direction of said axis;

c. flattening said web into a predetermined width;

d. forming the flattened web into a substantially U-shaped configuration by passing the flattened web into a member having a U-shaped cross-section and shaping the web by compressing both the interior and exterior surfaces of the web against the surfaces of the member;

e. feeding a continuous wrapper into contact with the underneath surface of the U-shaped web;

f. providing a supply of particulate material;

g. receiving a metered amount of the particulate material from its source of supply continuously and at spaced intervals;

h. delivering the spaced metered amounts of particulate material to the web immediately after it is formed into its U-shaped configuration;

i. depositing the spaced metered amounts of the delivered particulate material into the interior of the web and at the base of the U and between the legs of the U whereby metered amounts of the particulate material will be located on the web at predetermined spaced intervals;

j. closing the legs of the web about the spaced amount of particulate material substantially immediately after the particulate material is deposited and forming it into a cylindrical rod;

k. applying the wrapper about the cylindrical rod; and

l. transversely cutting the wrapper rod into lengths each having at least one intermediate portion containing a pocket with the particulate material within the web of selected filter material.

3,844,201

APPARATUS FOR CUTTING SHEET MATERIAL

Ralph H. Eggert, Cinnaminson, N.J., and Quentin T. Woods, Huntingdon Valley, Pa., assignors to FMC Corporation, San Jose, Calif.

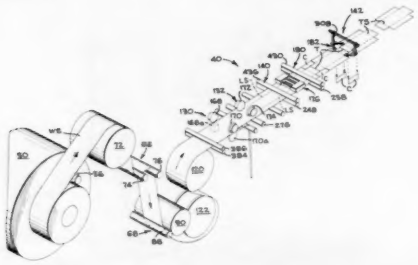
Continuation of Ser. No. 149,302, June 2, 1971, abandoned. This application July 25, 1973, Ser. No. 382,433

Int. Cl. B31b *1/16*

U.S. Cl. 93—36 A **10 Claims**

1. An apparatus for making box blanks from elongate strips of web material, comprising means for slitting a sheet of the

material into a plurality of strips; means for transporting said strips into a registered pile; means for successively feeding each strip from said pile; means for partially cutting the strip along lines spaced equally inwardly from the edges of the strip to define longitudinal score lines; means for making a pair of longitudinally spaced transverse score lines extending from one longitudinal score line to the other, means for transversely



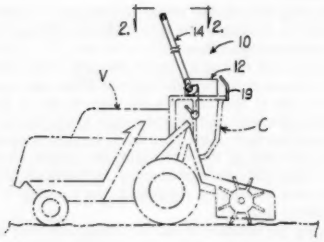
severing the strip along a line equally spaced from said transverse score lines and for partially severing a portion from each edge of the strip bounded by the transverse and longitudinal score lines to thereby define the corner pieces, said partial severing providing rupturable uncut portions which retain the adjacent box blanks connected, and means for rupturing said uncut portions to separate the completed blanks from the strip.

3,844,202

ENCLOSED CAB TYPE LAND VEHICLE AIR TREATMENT SYSTEM

J. C. Ferguson, Davison, Mich., assignor to Alton E. Sherwin, East Tawas, Mich., a part interest

Filed July 20, 1973, Ser. No. 381,362
Int. Cl. B60h 1/24
U.S. Cl. 98—2.11 **16 Claims**



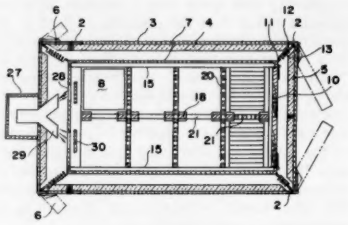
1. Enclosed cab type land vehicle air treatment system comprising a first part constructed to be mounted upon stationary structure of said vehicle and a second part pivotally and swingably mounted upon said first part so that said second part can be swung by obstacles struck by said second part during operation and movement of said vehicle, said second part being swung rearwardly and downwardly to automatically clear such obstacles, said second part comprising air intake stack means upstanding from said cab so as to be capable of taking in fresh air above a dust zone in which said vehicle operates and moves, and air conduit means connecting the lower end of said stack means to an air-utilizing chamber of said vehicle for supplying said chamber with air taken in by said stack means.

3,844,203

FREIGHT TRANSPORTING CONTAINER

Kenzo Takahashi, No. 18-10 Yoshimachi, Ukiwa-gun, Fukuoka-ken, Japan

Filed May 14, 1973, Ser. No. 360,061
Claims priority, application Japan, May 24, 1972, 47-51927; June 28, 1972, 47-64098; Dec. 27, 1972, 47-130032; Dec. 29, 1972, 47-1069
Int. Cl. F24f 13/00
U.S. Cl. 98—33 **9 Claims**



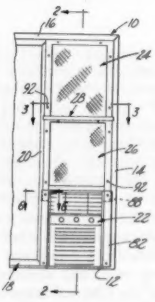
1. A freight transporting container comprising an outer container, at least one substantially rectangular cross-section freight holding inner container disposed in the space within said outer container and having corners which are vertical, and suspension means consisting of a plurality of tension springs connected between each corner of said freight holding inner container and said outer container at points spaced along said vertical corners and at an obtuse angle to both the side and the end of the container at each corner, said springs holding said inner container suspended in the space within said outer container.

3,844,204

SLIDING WINDOW FILLER UNIT FOR AIR CONDITIONERS

Donald F. Ball, Brantford, Ontario, Canada, assignor to Keep Rite Products Limited, Ontario, Canada

Filed Mar. 29, 1973, Ser. No. 345,964
Int. Cl. E06b 7/02
U.S. Cl. 98—94 AC **8 Claims**



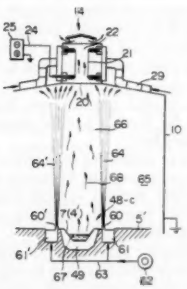
1. A filler panel assembly for closing the opening above an air conditioner mounted in a window of the type having a horizontally sliding panel wherein one side wall of the air conditioner is positioned adjacent one side of the window frame and the sliding panel is at least partially opened and positioned against the opposite side wall of the air conditioner comprising, a plurality of inverted U-shaped frames of substantially identical shape positioned one above the other in said opening with the adjacent ends of the vertically adjacent

frames interconnected by a joiner rail, each frame having a pair of vertical side legs integrally connected at their upper ends by a horizontal top leg, each of said legs having a laterally outwardly extending flange adapted to overlie the inner room-facing surfaces of the side and top members of said window frame and panel which define said opening, said legs also having a second flange extending perpendicularly to said lateral flanges and adapted to extend outwardly through said opening and overlie the inner peripheral surfaces of said members, a bottom rail adapted to be mounted on the top wall of the air conditioner so as to extend between the lower end portions of the side legs of the lowermost frame, said bottom rail having an upwardly opening groove extending lengthwise thereof, each of said second flanges of the side and top legs of said frames having a groove extending lengthwise thereof and opening laterally inwardly from the inner faces of the respective flanges, said grooves all lying in the same vertical plane, said joiner rail comprising a vertically disposed flange extending horizontally between the lower ends of the side legs of the next vertically adjacent frame, said last-mentioned flange having a downwardly opening groove extending lengthwise thereof for receiving the upper edge portion of the lateral flange of the top leg of the next lower frame and having an upwardly opening groove extending lengthwise thereof which lies in the same vertical plane as said grooves in said frames and bottom rail when the downwardly opening groove in the joiner rail is engaged with the upper edge portion of the lateral flange of the top leg of the next lower frame, and a panel seated in the grooves of each frame and the upwardly opening grooves in each filler rail and bottom rail.

3,844,205
VENTILATION METHOD AND APPARATUS WITH DUST COLLECTION BY ELECTRIC STATIC PRECIPITATOR

Tamotsu Watanabe, Tokyo, Japan, assignor to Nippon Kogei Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1972, Ser. No. 300,707
Claims priority, application Japan, Nov. 5, 1971, 46-87581; Nov. 6, 1971, 46-87981
Int. Cl. B03c *3/28, 3/41, 3/53*
U.S. Cl. 98—115 R **13 Claims**

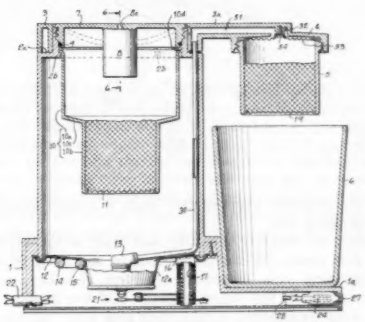


1. A method for electrostatic dust collection which comprises introducing a particulate contaminant-containing high temperature gas formed in the lower portion of a building into a dust-collecting passage provided with a charging electrode of a fine wire form and a dust-collecting electrode face confronting to said charging electrode, said dust-collecting passage being formed in a ventilating chamber provided in the upper portion of the building and connected with a suction port mounted at the lower end of said ventilating chamber and an exhaust port mounted on a roof or side wall of said ventilating chamber; forwarding said particulate contaminant-containing high temperature gas through said dust-collecting passage in which an electrostatic field is formed between said charging electrode of a fine wire form and said dust-collecting electrode face, along said charging electrode of a fine wire form and substantially in parallel thereto; thus catching particulate contaminants contained in the high temperature gas on the dust-collecting electrode face; and discharging the gas from which particulate contaminants have been substantially removed, into the exterior of the ventilating chamber.

3,844,206
INFUSOR APPARATUS

Robert L. Weber, Box 217, New Canaan, Conn. 06840

Continuation-in-part of Ser. No. 200,300, Nov. 19, 1971, Pat. No. 3,793,933. This application Jan. 17, 1972, Ser. No. 218,119
Int. Cl. A47j *31/30, 31/06*
U.S. Cl. 99—282 **25 Claims**



1. An infusor, comprising:
a. a chamber for receiving infusive material;
b. a removable closure for the top of the chamber;
c. an outlet valve at the bottom of the chamber;
d. means for heating infusive material in the chamber;
e. outlet valve operating means including a snap action bimetallic disc for opening the valve;
f. a sealed chamber enclosing the disc and having a common wall with said material receiving chamber so that the disc temperature varies with the temperature of the water in the chamber and the disc snaps the valve open when the water exceeds a predetermined temperature;
g. a valve stem connecting the center of the disc and the valve; and
h. a bellows encircling the valve stem and attached at one end to the valve and at the other end to a fixed portion of said common wall, said bellows serving as another portion of the common wall.

3,844,207
AUTOMATIC BLADE CONTROL MECHANISM FOR MEAT SKINNING MACHINES

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

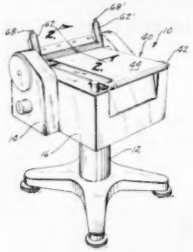
Continuation of Ser. No. 26,987, April 9, 1970, abandoned. This application Nov. 15, 1972, Ser. No. 306,927. The portion of the term of this patent subsequent to Nov. 21, 1989, has been disclaimed.
Int. Cl. A22c *17/12*
U.S. Cl. 99—589 **3 Claims**

1. A blade control mechanism for a skinning machine having rearward and forward ends comprising,
a frame;
a laterally extending gripping roll mounted tranversly of said frame; a blade positioned adjacent said gripping roll; means for rotating said gripping roll whereby a layer of

meat can be moved rearwardly toward said blade to separate a layer of skin from said meat;

a blade support means for holding said blade, said blade support means being movably mounted on said frame for movement from a first position wherein said blade is spaced a predetermined distance from said gripping roll to a second position wherein said blade is closer to said gripping roll for removing said layer of skin from said meat;

said blade support means being automatically movable from said first positon to said second position in response to said meat being urged into contact with said blade by said



gripping roll whereby said blade is moved toward said gripping roll;

means for movably mounting said blade to said blade support means for movement toward and away from said gripping roll comprises an arm member movably mounted to said support means, said arm member being pivotally attached to said blade and

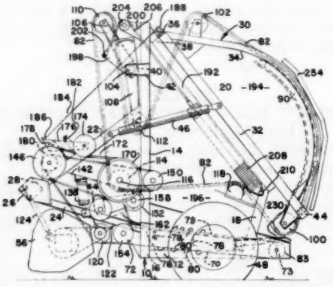
bias means yieldably urging said blade toward said gripping roll whereby said blade is yieldable away from said gripping roll against said bias means in response to increased thicknesses of said skin passing between said blade and said gripping roll.

3,844,208

HAY ROLL FORMING MACHINE

Allison W. Blanshine, Lititz; Edward T. Eggers, New Holland, and Myles Hyman, Lancaster, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 24, 1973, Ser. No. 353,946
Int. Cl. A01d *39/00*; **B30b** *5/06*, *9/00*
U.S. Cl. 100—88 **6 Claims**



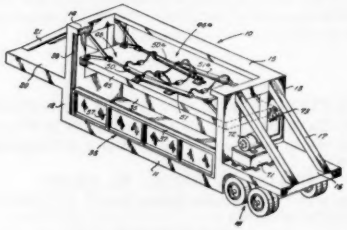
1. A mobile hay rolling machine comprising in combination, a mobile lower frame, a lower apron in the lower portion of said frame operable to receive a swath of forage crop and support and convey the same while being formed into a roll and move the same toward the rearward discharge end of the machine, upper frame means supported by said lower frame, an upper endless apron supported by and extending between the opposite sides of said upper frame means, apron contracting and expansion means operable relative to said upper apron initially to contract the overall length thereof when a roll of said forage crop is being formed and including guide means movably supported by said upper frame means, power means interconnected to said aprons to drive the same as aforsaid, and additional guide means fixedly carried by said upper frame means and comprising similar curved plates respectively supported by said upper frame means adjacent opposite sides thereof and having convex outer surfaces extending away from said lower apron and slidably engaged by the opposite edges of the upper course of said upper apron and the concaved inner surfaces of said plates being arranged to be ultimately engaged by the lower course of said upper apron when the same has been expanded to conform to the upper convex surface of a roll of forage crop of desired product size.

3,844,209

HYDRAULIC CRUSHING MACHINE

William R. Allbritton, 257 Old Mill Rd., Dallas, Tex. 75217

Filed Aug. 24, 1973, Ser. No. 391,309
Int. Cl. B30b *1/16*
U.S. Cl. 100—100 **9 Claims**



1. A crushing machine comprising

a body including a crusher bed defined by a generally horizontal platform for supporting an article to be crushed, end frame means extending upwardly from the opposite ends of said bed, horizontal stringer means connecting the upper ends of said end frame means, and upright wall means at the periphery of said bed for restricting lateral flow of the crushed metal;

a generally horizontal crusher ram disposed above said crusher bed for vertical parallel movement toward and away from said bed;

a hydraulic power system for supporting and powering said crusher ram including two hydraulic subsystems operating in generally parallel vertical planes, and a motor driven hydraulic pump for supplying pressurized hydraulic fluid to said subsystems;

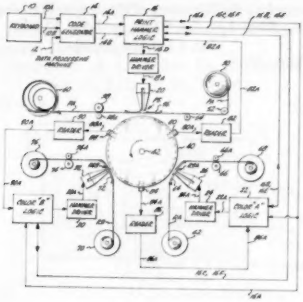
each planar hydraulic subsystem including first and second hydraulic power cylinders each having one end pivotally attached to said crusher ram intermediate the ends thereof and extending respectively toward opposite ends of said ram; first and second scissors assemblies associated respectively with said first and second power cylinders, each scissors assembly having an upper and lower arm pivotally connected, at one end, to each other and to the other end of its associated power cylinder; the free end of each upper scissors arm being pivotally connected to a respective end frame adjacent to the upper end thereof, and the free end of each lower scissors arm being pivotally connected to the crusher ram adjacent to a respective end; the pivotal connections of said two lower scissors arms and said two power cylinders to said crusher ram defining at least three spaced bearing points of the hydraulic subsystem transmitting force to said crusher ram;

and said two hydraulic subsystems defining at least six spaced bearing points for the transmission of force to said planar crusher ram.

3,844,210
MULTI-COLOR PRINTER UTILIZING ROTATING PRINT CYLINDER

David C. Allais, Edmonds, Wash., assignor to Interface Mechanisms, Inc., Mountlake Terrace, Wash.

Filed July 25, 1972, Ser. No. 275,106
Int. Cl. B41j *5/44*
U.S. Cl. 101—102 **7 Claims**



1. A printing system providing for precise registration of characters when imprinted in multiple colors upon a print medium, comprising:

a. a print cylinder having a plurality of sets of raised characters located around a circumferential surface thereof, one set of raised characters being provided for each color to be imprinted,

b. a plurality of inking stations located in proximity to said print cylinder, each of said inking stations including means for selectively inking the raised characters of one of said sets thereof on said circumferential surface with ink of a desired color in response to an inking control signal,

c. a printing station also located in proximity to said print cylinder, said printing station including means for selectively impacting the print medium against the characters in any of said plurality of sets on said circumferential surface in response to a print control signal,

d. timing means providing timing signals identifying the location of the characters in said plurality of sets relative to said printing station and to each of said plurality of inking stations,

e. code generator means providing an output signal representing a desired character to be imprinted and its color,

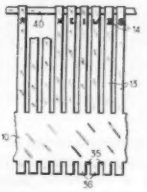
f. logic means responsive to said timing signals and to said output signal including means providing an inking control signal to one of said plurality of inking stations having ink of the desired color and including means providing a print control signal to said printing station.

3,844,211
ENDLESS TYPE SUPPORT BAND FOR MOVABLE-TYPE PRINTING MACHINE

Robert Jean Migoux, Paris, and Jean-Michel Singery, Belfort, both of France, assignors to Societe Industrielle Honeywell Bull, Paris, France

Filed Nov. 14, 1969, Ser. No. 876,913
Int. Cl. B41j *7/08*
U.S. Cl. 101—111 **10 Claims**

1. In a printing mechanism comprising printing types fastened to an endless flexible metal band stretched around a pair of driving pulleys rotating at constant speed, a plurality of printing hammers adapted to be selectively actuated and disposed along a rectilinear portion of the path followed by the printing types between the two pulleys and in proximity to said types, said hammers being adapted to effect a selective printing of characters on a printing support by producing brief contact of this support with predetermined printing types, said endless flexible metal band being provided on an edge with flexible strips in the form of fingers each having one end



integral with the band edge and a free end which extends parallel to the axes of said pulleys and supported for flexure about said band edge in the plane of said band, said fingers being identical and equally spaced apart, each finger being provided, on one face thereof and towards its free end, with one of said printing types in relief, said band also comprising an endless strip consisting of an elastomer and secured to the free end of each of said fingers to permit its flexure and to damp vibrations produced in each finger as a result of the action of one of said hammers on said finger.

3,844,212
COVERING FOR PERFORATED INKING DRUMS OF STENCIL PRINTING MACHINES

Guy M. Vosburg, Park Ridge, and John C. Marxen, Arlington Heights, both of Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

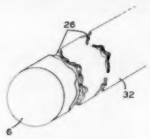
Continuation of Ser. No. 224,848, Feb. 9, 1972, abandoned. This application Nov. 7, 1973, Ser. No. 413,598
Int. Cl. B41l *13/04*
U.S. Cl. 101—116 **1 Claim**

1. In combination an ink holding drum for a mimeograph type of stencil duplicator having a substantial portion of its cylindrical surface provided with a plurality of closely adjacent perforations constituting an ink dispensing screen, and a covering removably mounted over the entire screen portion of said drum, said covering comprising a porous base cloth, an ink impervious rubber coating covering selected portions of the outer surface of said porous base cloth to effect a damming of ink within the drum over those selected portions, and the remaining portions of the porous base cloth being uncoated and constituting non-dammed portions, a stencil to be reproduced placed over the non-dammed portions of the porous base cloth, said rubber coating vulcanized to said porous base cloth, and said porous base cloth having a smooth surface on the side adjacent the drum and a nap surface on its outer side to which the rubber coating is vulcanized.

3,844,213
METHOD OF SILK SCREEN PRINTING

Harold N. Graybeal, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed July 21, 1970, Ser. No. 56,904
Int. Cl. B41m 1/12
U.S. Cl. 101—129 1 Claim

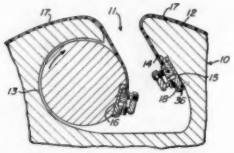


1. In a method of printing a design on a substrate by the use of a metal pattern screen wherein there is provided a metal pattern screen with a decorative pattern provided therein through the use of a hole means in the screen, a means is provided for maintaining a squeegee rod against the surface of the screen to force ink through the screen, and a porous substrate is passed adjacent the screen adjacent the point where the squeegee rod contacts the screen so that ink will be passed through the screen in a predetermined pattern and be applied to the porous substrate, the improvement comprising: providing the surface of the squeegee rod with an irregular pattern of raised areas and depressed areas, printing a porous substrate with the screen using the irregular surface squeegee to provide a pattern effect to the substrate, and causing the irregular surface squeegee rod and porous substrate to coact to provide a pattern effect with the raised area of the rod forcing more ink into a porous substrate while the depressed areas of the rod force less ink into the substrate to give areas of different ink concentration.

3,844,214
PRINTING BLANKET BAR ASSEMBLY WITH EDGING STRIP LOCKING MEANS

Kenneth C. Smith, Westhoughton, England, assignor to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 194,216, Nov. 1, 1971, abandoned. This application Sept. 11, 1973, Ser. No. 396,157
Int. Cl. B41f 29/04
U.S. Cl. 101—415.1 2 Claims

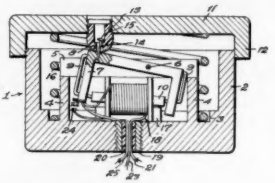


1. In a printing press cylinder having an opening therein, an assembly for mounting a printing blanket within said opening, said blanket having an edging strip secured to one end thereof; said assembly including a bar mounted within said opening and extending longitudinally of said cylinder, said bar comprising a first side wall adjacent one wall of said opening, a second side wall parallel to said first side wall, a lower wall interconnecting said side walls, and an upper wall parallel to said lower wall and connected to said first side wall, said walls all defining a channel for receiving said edging strip; said second side wall having locking members mounted thereon comprising eccentrically mounted cylinders which may be rotated out of contact with said edging strip during insertion or removal thereof, said lower wall having a plurality of biasing members biased toward said upper wall; said edging strip having a lesser top to bottom dimension than the channel spacing between said upper and lower walls and a lesser transverse dimension than the channel spacing between said side walls, said edging strip contacting said first side wall and said top wall upon insertion into said channel but spaced from said second side wall and said bottom wall; said locking members operable to contact one lateral edge of said edging strip and said biasing members contacting the lower surface of said edging strip, after insertion into said channel.

3,844,215
MINE FUZE

Joseph P. Rogers, Jr., and Richard G. Thresher, both of Ledgewood, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 13, 1960, Ser. No. 22,066
Int. Cl. F42b 23/00
U.S. Cl. 102—8 3 Claims

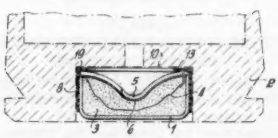


3. A land mine including an electrical detonator, first and second fuzes adapted to be buried in the ground; each fuze comprising a housing, a pressure plate carried by and forming a closure for said housing, an induction coil fixed in said housing, a permanent magnet extending through said coil, said permanent magnet being connected to said pressure plate so as to move in said coil in response to operation of the pressure plate, and a switch having a pair of contacts, one contact being carried by said housing and the other contact being carried by said permanent magnet whereby said switch is closed in response to depression of said pressure plate, said induction coil and said switch being electrically connected in series; opposite sides of said induction coil of said first fuze being connected, respectively, to one side of said detonator and to said switch of said second fuze and opposite sides of said induction coil of said second fuze being connected, respectively to the other side of said detonator and said switch of said first fuze.

3,844,216
DETONATOR CAP ASSEMBLY FOR FIREARM CARTRIDGES

Ferdinand Jakobs, Marienstrasse 5, 6601 Quierschied-Saar, and Heinrich Sewing, Neuklef, 5276 Wiehl 1, both of Germany

Filed June 18, 1973, Ser. No. 370,716
Claims priority, application Germany, June 30, 1972, 2232049
Int. Cl. F42b 9/08
U.S. Cl. 102—46 25 Claims



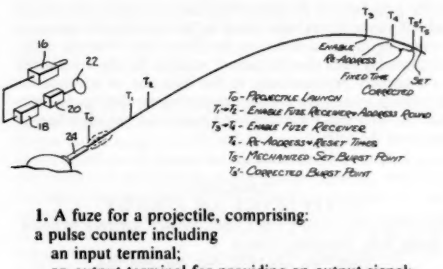
1. A detonator cap assembly for firearm cartridges including a cartridge casing of electrically conductive material capable of being alternatively fired by electrical means and by

percussion means comprising a detonator cap of electrically conductive material mounted within said cartridge casing and configured to enable percussive detonation thereof, an anvil located between said detonator cap and said casing, a charge of fulminating material contained within said cap between said cap and said anvil, means for electrically insulating said cap from said cartridge casing, a thin electrically conductive priming wire extending within said cap through said charge of fulminating material, and means for conductively connecting said wire between said detonator cap and said cartridge casing.

3,844,217
CONTROLLED RANGE FUZE

Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sept. 28, 1972, Ser. No. 292,966
Int. Cl. F42c *11/06, 13/04*
U.S. Cl. 102—70.2 R **15 Claims**



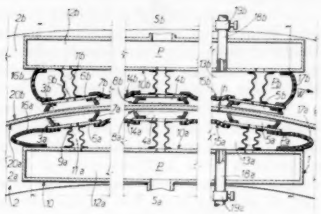
1. A fuze for a projectile, comprising:
a pulse counter including
an input terminal;
an output terminal for providing an output signal;
first means coupled to said counter for presetting said counter to provide said output signal upon a first selected count;
second means coupled to said input terminal of said counter for providing a series of pulses to be counted;
third means coupled to said counter for forcing said counter to provide said output signal upon a second selected count; and
output function means coupled to said output terminal of said counter for providing an output function upon receipt of said counter output signal.

3,844,218
GROUND EFFECT GUIDING MEANS FOR A TRACKED VEHICLE

Francis Marie Jean Croix-Marie, Viry Chatillon; Christian Pierre Bonnat, Gometz-Le-Chatel, and Jean-Pierre Georges Denis Morel, Jouars-Pontchartrain, all of France, assignors to Bertin & Cie, Plaisir, France

Filed Dec. 14, 1972, Ser. No. 315,192
Claims priority, application France, Dec. 17, 1971, 71.45567
Int. Cl. A63g *1/00*
U.S. Cl. 104—23 FS **23 Claims**

1. In and for a transport system comprising a track and a machine adapted to move therealong, the track having at least one guiding surface having a vertical component, the machine comprising a structure having a surface near the guiding surface, ground effect guiding means for guiding the machine along the track, the guiding means comprising:
means for bounding fluid cushion enclosures between the machine structure and the guiding surface, said structure bearing on said surface by way of said enclosures, the enclosures together forming at least one group consisting of at least two fluid cushion enclosures disposed in consecutive relationship lengthwise of the machine;
at least one deformable chamber; means for bounding said deformable chamber between the machine structure surface and said group of fluid cushion enclosures, and

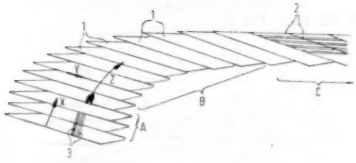


means for securing all the fluid cushion enclosures of said group to said chamber;
means for supplying fluid to the fluid cushion enclosures; and
means for supplying fluid to the said deformable chamber.

3,844,219
PLATFORM CONVEYORS

Martyn Frederick Jenkins, Edingale, Tamworth, England, assignor to Dunlop Limited, London, England

Filed Sept. 21, 1973, Ser. No. 399,731
Claims priority, application Great Britain, Sept. 26, 1972, 44514/72
Int. Cl. A63g *1/00*
U.S. Cl. 104—25 **13 Claims**



1. A platform conveyor comprising a low-speed zone, a high-speed zone and an intermediate variable speed zone comprising a plurality of platforms in edge-to-edge contact in the load bearing part of the conveyor which, in the variable speed zone move laterally relative to one another, each platform having provided parallel raised portions defining parallel grooves across a surface of the platform forming a load-bearing surface, said portions being combed at the end of the load-bearing part of the conveyor by interengagement of the grooves with a comb member wherein each contiguous pair of platforms at the adjacent edges has one platform of the pair provided at its adjacent edge with raised portions of resilient material.

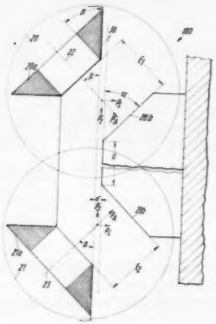
3,844,220
MAGNETIC SUSPENSION AND SWITCHING FOR VEHICLES

Walter Mehnert, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow Blohm GmbH, Munich, Germany

Filed Dec. 26, 1972, Ser. No. 318,233
Claims priority, application Germany, Dec. 23, 1971, 2164157
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **14 Claims**

1. A traffic system of the magnetic cushion type, particularly for using repulsive magnetic forces, comprising a guide system provided as a single unit for both magnetically guiding

and magnetically supporting a vehicle on a track having a guide system part on said vehicle and a magnetically coacting guide system part on said track and means spacing said parts

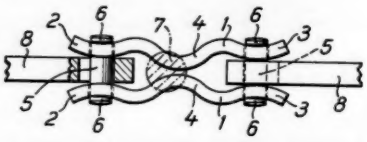


by a through extending, vertical, rectilinear air gap δ for enabling transfer of the vehicle from a standing condition to a hanging condition and vice versa with respect to the track without significant vehicle speed reduction.

3,844,221
CONVEYOR CHAIN

Hans-Georg Fromme, 15 Deutschherrenberg, Wetzlar, Germany

Filed Nov. 6, 1972, Ser. No. 303,829
Claims priority, application Germany, Nov. 30, 1971, 2159245
Int. Cl. B65g *17/38*; **F16g** *13/12*
U.S. Cl. 104—172 C **2 Claims**



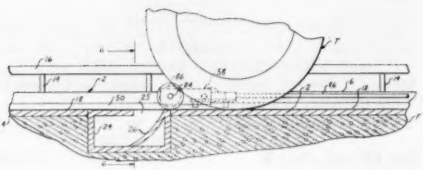
1. A conveyor chain for pushing vehicles to be moved by engaging tow pins having a given diameter on vehicles by means of dog sections on the chain, said chain comprising in an alternate arrangement blocks and pairs of identically shaped but symmetrically arranged block links connected with their end portions to the adjacent blocks by transverse pins, wherein the improvement comprises block links with each of said block links having a body with a constant cross section, said body having bent-in central portions having a convex side which is arranged on the chain with said convex side of the bend extending in the direction of the opposite block link, thus eliminating the space between each pair of block links to an extent less than said given diameter which prevents said pins of vehicles from engaging the chain between the blocks.

3,844,222
CONVEYOR FOR WHEELED VEHICLES

Ronald L. Eller, Cahokia, Ill., assignor to Passport Corporation, Maryland Heights, Mo.

Filed May 16, 1973, Ser. No. 360,799
Int. Cl. B65g *19/22*
U.S. Cl. 104—172 B **11 Claims**

1. A conveyor for wheeled vehicles, said conveyor comprising a track defining a path along which a vehicle wheel rolls in a direction of advance, the track having at least two recesses opening out of the path thereof, a fluid operated cylinder assembly located along the track with its axis parallel to the path, a drive roller moved by the cylinder assembly over the path in the direction of advance and in the opposite return direction, the movement of the roller being between the recesses, whereby the drive roller when moved in the direction of advance will engage the periphery of a vehicle wheel located

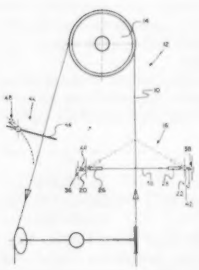


on the path beyond the first recess encountered by the wheel and will move the vehicle wheel in the direction of advance, connecting means connecting the drive roller with the cylinder assembly such that the axis of rotation for the drive roller is continually perpendicular to the direction of advance for the vehicle wheel, the connecting means permitting the drive roller to drop into the recesses to enable the vehicle wheel to pass over the roller.

3,844,223
SAFETY DEVICE FOR A SKILIFT

Rene Brian, St. Nazaire Les Eymes, France, assignor to Pomagalski S.A., Fontaine, France

Filed Nov. 21, 1972, Ser. No. 308,584
Claims priority, application France, Dec. 8, 1971, 71.44144
Int. Cl. B61b *11/02*
U.S. Cl. 104—173 **3 Claims**

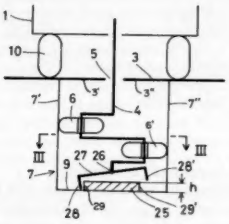


1. A skilift, said skilift comprising:
a. a tow track including a tow track end;
b. a safety device for protecting skiers, said safety device extending transversely of said tow track proximate said tow track end to detect crossing of said end by a skier, said safety device comprising:
i. a pair of anchoring points, one of said points disposed on each side of said track;
ii. a rope attached to and normally elastically stretched between said points across said tow track, whereby engagement of said rope by a skier passing over said tow track end will angularly displace said rope from its normal position into a V-shape;
iii. means for detecting said angular displacement of said rope relative to said anchoring points thereby to effect a stopping of the skilift as long as said rope retains said V-shape.

3,844,224
GUIDING SYSTEM FOR A COMPUTER CONTROLLED VEHICLE

Takemochi Ishii; Masakazu Iguchi, and Masaki Koshi, all of Tokyo, Japan, assignors to Japan Society for the Promotion of Machine Industry, Tokyo, Japan

Filed Aug. 15, 1972, Ser. No. 280,838
Claims priority, application Japan, Aug. 19, 1971, 46-62587; Aug. 19, 1971, 46-62588; Aug. 19, 1971, 46-62589
Int. Cl. B61f *9/00*
U.S. Cl. 104—244.1 **3 Claims**

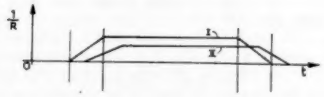


1. A guiding system for guiding a computer controlled vehicle through a network of main and branch tracks, said system comprising guide channels extending along the center lines of said tracks below the upper surfaces thereof, a guide rail formed at the bottom of said guide channels, and a flat U-shaped bar attached to the steering mechanism of said vehicle by a toggle means, said bar extending into said guide channels and adapted to selectively engage the sides of said rail to control the direction taken by the vehicle at a junction, said guide channels having a sloped portion at their bottoms to raise said bar out of contact with said rail when the vehicle approaches a track junction.

3,844,225
RAILWAY CAR ROLL CONTROL SYSTEM

Franco Di Majo, Turin, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

Filed Feb. 3, 1972, Ser. No. 223,240
Claims priority, application Italy, Feb. 9, 1971, 67426/71
Int. Cl. B60g *21/04;* **B61f** *3/00, 5/24*
U.S. Cl. 105—164 **6 Claims**



1. A control system for controlling the lateral trim of a railway body which is rotatable about a longitudinal axis on a supporting truck in which at least one vehicle axle is supported for rotation as the vehicle travels along a curved track, said system comprising;

a gyroscope mounted on said truck in close relation to said axle of the vehicle for providing an electrical output signal representative of the tilt of said axle about a longitudinal axis of the vehicle, integrator means connected to said gyroscope for integrating said output signal, said integrator means being of the type whose output signal returns to zero when the input signal is removed,

a threshold device connected to the integrator means to provide an enabling control signal when the integrated signal reaches a predetermined threshold level,

signal forming means including a tachometer adapted to be mounted on the vehicle to provide a signal representative of the vehicle speed, said signal forming means providing from said speed signal a rate signal adapted to be applied to a servo mechanism for effecting the desired rate of rotation of the vehicle body about a longitudinal axis of the body in response to said rate signal,

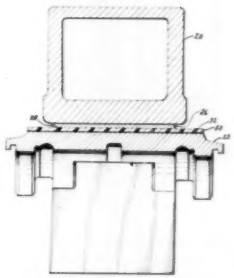
gating means connected to said first forming means and having a control input connected to said threshold device whereby said gating means is adapted to pass said rate signal to said servo mechanism when said threshold device produces the enabling control signal,

said system further comprising in series, a first lateral accelerometer adapted to be mounted upon said truck of the vehicle, a first low-pass filter, and a differentiator, said system being controlled after a predetermined time from the detected start of a curve in the track, by the output signal of said differentiator.

3,844,226
RAILWAY CAR TRUCK

Rene H. Brodeur, 2108 Beechwood Ave., Wilmette, Ill. 60091; Boris Terlecky, 234 Lippincott Ln., Fox Lake, Ill. 60020, and Lawrence P. Greenfield, 927 Hinman Ave., Evanston, Ill. 60202

Filed June 11, 1973, Ser. No. 368,486
Int. Cl. B61f *5/26*
U.S. Cl. 105—222 **3 Claims**



1. In a railway car truck having side frames with pedestal openings for respectively receiving the journals and adapters of associated wheel and axle assemblies, each of the openings having a roof surface, the improvement which comprises bearing means having a low coefficient of friction disposed between the adapter and the roof surface at each pedestal opening, and said bearing means providing the sole load bearing surfaces between the truck side frames and the wheel and axle assemblies, whereby the journals and adapters of wheel and axle assemblies are slidable engaged with the roof surfaces at each pedestal opening, wherein said bearing means consists of a stainless steel plate secured to each respective roof surface and having a surface in facing relationship to the adapter, and a non-metallic plate having a low coefficient of friction secured to the adapter and receiving said stainless steel plate in load bearing engagement only along said surface thereof.

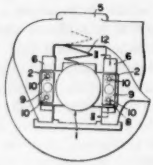
3,844,227
AXLE SPRING SNUBBING DEVICE FOR RAILWAY CARS

Soichi Matsumiya, Osaka, Japan, assignor to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Dec. 19, 1973, Ser. No. 425,950
Int. Cl. B61f *5/26*
U.S. Cl. 105—224 R **5 Claims**

1. An axle spring snubbing device for railway cars comprising a bore means provided in each of wing parts of an axle box,

a cup-shaped spring seat slidably inserted in the bore means, fitting seat secured as vertically spaced to each of the above



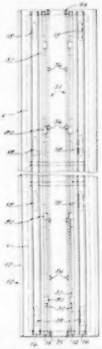
mentioned wing parts, a lid fitted with fixing means to each fitting seat and a spring means interposed between the lid and spring seat.

3,844,228

TIE-DOWN SYSTEM FOR RAIL CARS

Donald J. Blunden, Southfield, and Israel D. Peisner, Huntington Woods, both of Mich., assignors to Whitehead & Kales Company, River Rouge, Mich.

Filed Mar. 19, 1973, Ser. No. 342,385
Int. Cl. B61d 3/16
U.S. Cl. 105—368 T **13 Claims**



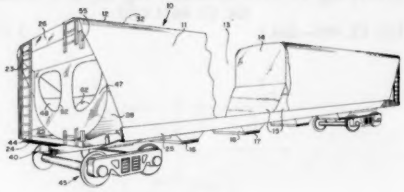
1. Apparatus for securing a plurality of vehicles on the elongated deck of a transport, comprising guide means including a rail secured upon and extending lengthwise of the deck, carriages slidably mounted on said rail for movement lengthwise thereof, means for securing said carriages against movement with respect to said rail in selected positions along the length thereof, means for connecting each carriage to the underframe of a vehicle comprising a rear flexible linear member extending from the rear portion of said carriage, a front flexible linear member extending from the front portion of said carriage, and a connecting member joined to the ends of said linear members and adapted to be connected to the underframe of a vehicle so that said rear linear member extends downwardly and rearwardly therefrom to said carriage to restrain the vehicle from forward movement and said front linear member extends downwardly and forwardly therefrom to said carriage to restrain the vehicle from rearward movement, said rail being of sufficient length to secure a plurality of vehicles arranged in tandem along the length thereof, and said front and rear linear members when connected to the underframes of the vehicles by said connecting members forming angles to said rail such that said carriages may be dragged along said rail by the vehicles during either forward or rearward loading.

3,844,229

RAILWAY HOPPER CAR END STRUCTURE ASSEMBLY

Richard Ace Martin, Irving, Tex., assignor to Trinity Industries, Inc., Dallas, Tex.

Filed Feb. 26, 1973, Ser. No. 335,439
Int. Cl. B61d 7/04, 7/14; B61f 1/10
U.S. Cl. 105—248 **6 Claims**



1. A railway hopper car comprising:

a car body defined by opposite arcuate side sheets having a side sill extending longitudinally along the lower marginal portion of each side sheet and at least one inclined end slope sheet partially defining an end hopper compartment;

an end support structure for said end hopper compartment, said support structure including a bolster assembly defined by a bottom plate extending transversely between said side sills and an upper wrap sheet, said wrap sheet extending arcuately between said sheets exterior to said end hopper compartment and secured at an inner edge to said slope sheet and extending toward the associated car end from said inclined slope sheet; and

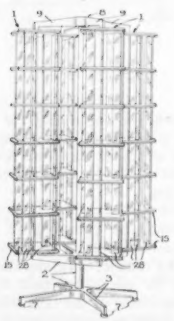
said support structure further including a plurality of spaced apart diaphragm plates extending transversely to the longitudinal axis of said car body and secured to the interior of said wrap sheet to stiffen said wrap sheet and having an upper generally horizontal edge secured to said inclined slope sheet.

3,844,230

DISPLAYER FOR PAPERBACK BOOKS

Harold L. Hudson; Gregory G. Mt. Pleasant, and Robert K. Scherzer, all of Liverpool, N.Y., assignors to Gaylord Bros., Inc., Syracuse, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,552
Int. Cl. A47b 65/00
U.S. Cl. 108—60 **2 Claims**



1. A displayer for displaying paperback books, comprising a plurality of platforms or shelves of rectangular outline dis-

posed in vertically spaced horizontal positions in register with each other on a common central axis and forming a multi-tiered book supporting tower, each of said shelves having one set of slots formed therein and extended parallel to the marginal edges of the respective shelves and located substantially mid-way of one quarter-segment of each shelf at alternate sides of the tower and also having a second set of slots extended inwardly from the middle of each marginal edge of each shelf for approximately one-half the distance from the marginal edges to the center of the respective shelves, with the slots of the respective sets being in vertical registry with the corresponding slots of all the shelves, a plurality of flat, substantially rigid, transparent supporting strips extended through each set of aligned slots from the top to the bottom of the tower, anchor means for connecting the respective shelves to the supporting strips aforesaid in the zones of the respective shelf slots, said supporting strips being so arranged as to divide each shelf into quarter-segments of sufficient size to receive quarter-groups of books in upstanding position on the respective shelves and with the spines of each book of successive quarter-groups on the same shelf facing outwardly of the tower in alternate fashion about the sides of the tower, and means for rotatably supporting the tower to permit rotation thereof about its central vertical axis to permit unobstructed viewing of all books when displayed on the shelves of the tower.

3,844,231

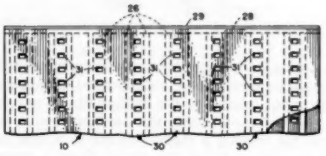
SANDWICH PANEL STRUCTURES FOR SUPPORTING SHELVES

Henry Safford Peacock, Lincoln, Ill., assignor to Myers Industrial, Inc., Decatur, Ill.

Continuation-in-part of Ser. No. 143,409, May 14, 1971, abandoned. This application Aug. 16, 1972, Ser. No. 281,173

Int. Cl. A47b *9/00*

U.S. Cl. 108—107 **4 Claims**



1. A panel and shelving structure adapted to support relatively heavily loaded removable and adjustable shelving units which comprises a first, substantially planar skin, a second, substantially planar skin, a core structure between said skins, said first skin having a plurality of perforations therein arranged in a plurality of vertical columns of said perforations for receiving studs or hooks projecting rearwardly from the rear portion of a shelf structure, said core structure having a plurality of vertical, parallel, straight, elongated strips respectively extending from the top to the bottom of said panel structure and adhesively bonded substantially continuously along opposite side edges thereof to respective rear faces of said skins, said opposite edges having a depth of at least ⅛ inch, the respective strips being disposed contiguous to the respective side edges of said perforations in respective columns, the spacing between the respective edges of said strips or slabs and the respective side edges of said perforations is zero to about ½ inch, said core having free spaces behind said perforations to permit insertion of hooks or studs of said shelving units, and at least one shelf mounted on said first skin and supported thereon by shelf mounting means embodying hooked members extending through respective perforations in said first skin with leg portions of said hooked members lying against the inner face of said first skin adjacent the respective perforations, whereby the joinder of the two skins by the vertical strips with substantially continuous joinder of the respective edges to the skins and close spacing between the skin-bonded strips and side edges of the perforations provides an integrated structure wherein the opposite skin and the contiguous strips coact to eliminate essentially bowing in the shelf-supporting skin due to torque forces which occur under heavy loading of shelves cantilevered from the shelf-supporting skin by said shelf mounting means with the hooked members extending into said perforations and hooked behind said last-mentioned skin.

3,844,232

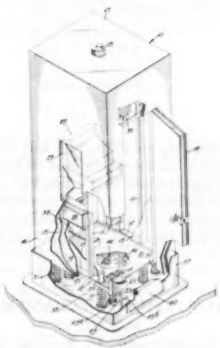
CASHIER'S BOOTH

James L. Robinson, 4706 Hazel Ave., Philadelphia, Pa. 19143

Continuation-in-part of Ser. No. 219,426, Jan. 20, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 394,132

Int. Cl. E05g *3/00*

U.S. Cl. 109—7 **15 Claims**



1. Apparatus for use in conjunction with a receptacle for valuables to permit only authorized persons to obtain access to the receptacle, comprising: a platform, means mounting said receptacle at a location with respect to said platform to require a person to support himself on the platform when obtaining access to the receptacle, and means responsive to weight on said platform for permitting access to said receptacle when a predetermined authorized weight is applied to said platform and for preventing access to said receptacle when unauthorized weights different from said predetermined weight are applied to said platform, whereby access to the receptacle is permitted only by an authorized person having a weight corresponding to the preset authorized weight.

3,844,233

DIRECTIONAL CONTROL OF HOT GASES FROM AN INCINERATOR OR THE LIKE

James K. Fishback, Richmond, Va., assignor to Consumat Systems Inc., Richmond, Va.

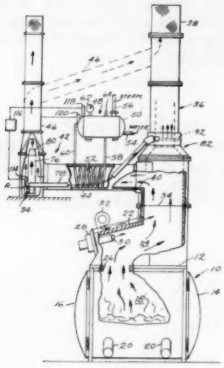
Filed Aug. 9, 1973, Ser. No. 386,878

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 R **25 Claims**

1. A directional control apparatus for flue gases received from a combustion zone comprising: an upwardly extending stack operatively communicating with the combustion zone and normally aspirating flue gases therefrom to atmosphere; a conduit having a first portion extending transversely to the axis of said stack and opening to said stack and a second portion for discharging flue gases diverted from said stack through said first portion; heat recovery means including heat exchanger means in said first portion of said conduit for recov-

ery of heat from flue gases; and aerodynamic valving means to divert gases from aspirating upwardly and discharging from said stack to go through and discharge from said conduit whereby said heat exchanger means removes heat from said flue gases, said aerodynamic valving means including a first



means for discharging an air jet into said conduit in a downstream direction of said conduit, said first means being positioned downstream of said heat exchanger means and a second means for discharging air in a downstream direction in said stack, said second means being positioned downstream of the opening of said first portion of said conduit to said stack.

3,844,234

WORK CLAMP FEEDING MECHANISM FOR SEWING MACHINES

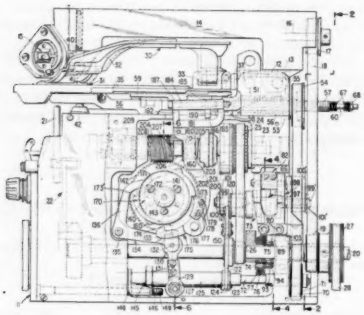
Gunter Tolle, Wendelinusstr. 15, Bruchsal 4, Germany

Filed May 9, 1973, Ser. No. 358,523

Claims priority, application Germany, May 12, 1972, 2223202

Int. Cl. D05b *3/06*

U.S. Cl. 112—70 **8 Claims**



1. A work clamp feeding mechanism for a buttonhole sewing maching having a frame, a work clamp, and guide means constraining said work clamp to move in a predetermined path relatively to said frame, said work clamp feeding mechanism comprising a work clamp shifting member supported in said frame and formed with screw threads, means operatively connecting said work clamp shifting member with said work clamp to impart movement to said work clamp along said predetermined path, a belt pulley journaled in said frame, said belt pulley formed with screw threads arranged in meshing relation with the screw threads of said work clamp shifting member, a flexible belt arranged in driving engagement with said belt pulley, and belt indexing mechanism operated by said sewing machine for imparting lengthwise movement to said flexible belt selectively in either direction.

3,844,235

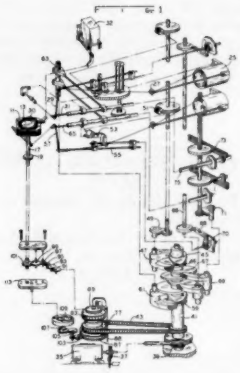
END TURN BINDING DEVICE AND METHOD

Richard J. Habegger, Grabill, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 28, 1973, Ser. No. 336,727

Int. Cl. D05b *23/00*

U.S. Cl. 112—121.2 **18 Claims**



1. In a device for binding the end turn portions of dynamoelectric machine stator coils, an improved apparatus for indexing the stator relative to the binding device and for compensating for non-radial stator slot configuration comprising: first means for moving a stator relative to a first axis; and second means for rotating the stator about a second axis parallel to and removed from the first axis.

3,844,236

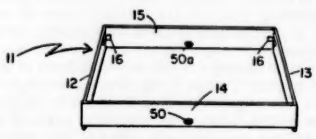
DISSEMBLABLE FLOAT

Charles G. Boyajian, 14 Vincent St., Saugus, Mass. 01906

Continuation of Ser. No. 144,766, May 19, 1971, abandoned. This application July 25, 1973, Ser. No. 382,490

Int. Cl. B63b *35/00*

U.S. Cl. 114—.5 **6 Claims**



1. A dissemblable float comprising:

a. side walls (**12**, **13**, **14** and **15**) detachably connected to each other at their ends by mating hinge portions and removable pins (**16**) to form an enclosure; and

b. a plurality of float members located within said enclosure (25) each member comprising a block of light weight, cellular, water-resistant, generally rigid plastic (25*d*) extending within and between two opposing side walls, each member further having spaced transverse boards (25*c*) resting thereon and supporting a longitudinal board (25*a*) whose ends rest on the side walls and are detachably connected thereto by mating hinge portions and removable pins.

3,844,237

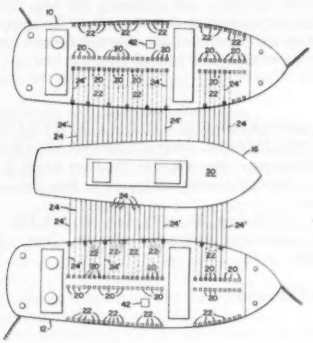
APPARATUS FOR RAISING SUNKEN VESSELS

Fernando R. Gil, 902 W. Alfred, Tampa, Fla. 33603

Continuation-in-part of Ser. No. 150,261, June 7, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,081

Int. Cl. B63c *7/02*

U.S. Cl. 114—51 **1 Claim**



1. A raising assembly designed for raising sunken vessels and the like from the bottom of a body of water, said assembly comprising at least two ships each including a centerline, said ships positioned in spaced apart relation relative to one another on each side of the sunken vessel by spreader means, cradle means including a first and second plurality of cables interconnected between each said ship and engaging the sunken vessel, lift means comprising a plurality of pairs of winch means arranged in spaced relation substantially adjacent to and on opposite sides of the centerline of each of said ships and floatation means comprising a plurality of compartments in the hull of each said ship to selectively control the draft of each said ship, said spreader means comprising a plurality of rollers arranged along each side of each ship, each of said rollers aligned with at least one winch means of said plurality of winch pairs, cable positioning means including a plurality of pairs of substantially vertical narrow channels, each said pair of channels disposed in communicating relation to a winch means pair and corresponding to each of said first plurality of cables, said channels extending substantially through the hull of each said ship immediately adjacent the centerline of each said ship, to restrict the movement of each said corresponding cable to remain in a substantially vertical position within said channel, said first plurality of cables being interconnected between said corresponding winch means of said ships through said corresponding channels to control the depth of the sunken vessel, said second plurality of cables being interconnected between said corresponding winch means of said ships over said corresponding rollers to control the separation of said ships relative to each other; said first and second plurality of cables operatively engaging said sunken vessel substantially continuously throughout the raising of said sunken vessel.

3,844,238

SAILING BOATS WITH RIGID SAILS

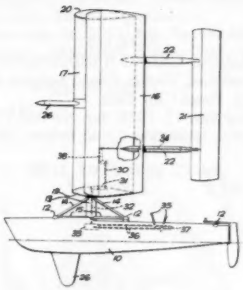
Alastair Hugh Garnet Murray, 16 Salterns Ln., Hayling Island, England

Filed Jan. 10, 1972, Ser. No. 216,377

Claims priority, application Great Britain, Jan. 8, 1971, 1065/71; Jan. 8, 1971, 1070/71

Int. Cl. B63h *9/06*

U.S. Cl. 114—39 **5 Claims**



1. A sailing craft having at least one upright rigid aerofoil, means mounting said aerofoil for free rotation about an upright axis, a tail vane on the rotating aerofoil and control means for controlling the angular position of the tail vane with respect to said rigid aerofoil, said control means including first and second control levers for use respectively on port and starboard tacks, mechanical means interconnecting the levers so that moving one in one direction causes the other to move in the opposite direction and means operatively connecting the tail vane to said levers.

3,844,239

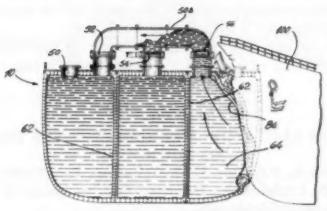
LIQUID BULK CARRYING SHIP

Leonard J. McLaughlin, 49 Sion Ave., Lorraine, Quebec; William H. German, Dominion Square Bldg., Suite 401, Montreal 110, Quebec, and Robert A. Hartley, 259 Trenton Ave., T.M.R., Montreal 304, Quebec, all of Canada

Filed June 5, 1972, Ser. No. 259,426

Int. Cl. B63b *25/08*

U.S. Cl. 114—74 R **8 Claims**



1. A liquid carrying tanker comprising a plurality of closed individual reservoirs for receiving and carrying a liquid an ejecting piping system connecting the upper part of each reservoir to an empty space and provided with a rapid acting pressure controlled valve adjacent each said reservoirs, said valve keeping the liquid inside the reservoir from flowing into the ejecting piping system during normal operation, and an impermeable, stretchable, elastomeric lining conforming to

and extending throughout the entire inner surface of each reservoir and being releasably secured to the inner walls of said reservoirs, the said lining being secured to said walls by releasable means permitting the same to separate from the walls of any one of the reservoirs upon a predetermined minimum external concussive pressure and deformation of the walls of said one reservoir, the lining being stretched upon said pressure and deformation to decrease the volume within said one reservoir and force the liquid contained therein to open said valve and to flow through said ejecting piping system and towards said empty space.

3,844,240

BOW LIQUID CARGO HANDLING SYSTEM

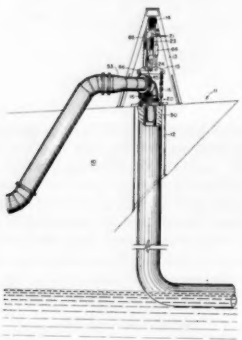
James W. Whitehouse, Weston, Conn., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 17, 1972, Ser. No. 307,751

Claims priority, application Great Britain, Mar. 20, 1972, 12929/72

Int. Cl. B63b *25/08, 21/00*

U.S. Cl. 114—74 R **9 Claims**



1. A tanker bow products line handling system adapted to be connected to a flexible mooring products hose floating in the water comprising:

a. a vertical opening in the bow of said tanker;

b. winch means mounted over said opening and having a hauling rope therein;

c. a ship's product line pipe having a terminus at said vertical opening;

d. means connected to said hauling rope for pulling said mooring products hose out of the water and up said vertical opening into a securable position; and

e. means on said bow nonrotatably securing said mooring products hose to said ship and to said ship's product line.

3,844,241

AUXILIARY FLOTATION FOR REDUCING THE DRAFT OF SHIPS

Harry G. Black, P.O. Box 3237, Galveston, Tex. 77550, and Lowell B. Christenson, Houston, Tex., assignors to said Black, by said Christenson

Filed Aug. 31, 1973, Ser. No. 393,620

Int. Cl. B63b *43/14*

U.S. Cl. 114—123 **9 Claims**

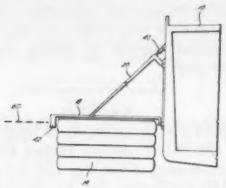
1. Auxiliary flotation for reducing the draft of ships comprising,

a plurality of expansible pneumatically inflatable flotation bags,

vertical track means directly secured and extending coplanar to the side of the ship and extending to an underwater position,

a load-bearing structure pivotally and slidably supporting each bag from said track means,

a control arm pivotally connected to the side of the ship and slidably connected to the load-bearing structure for extending the flotation bags outwardly into a lowered underwater position and retracting the bags into a raised retracted position against the side of the ship,



power means connected between the control arm and the ship for rotating the control arm.

3,844,242

APPARATUS FOR AUTOMATIC DYNAMIC POSITIONING AND STEERING SYSTEMS

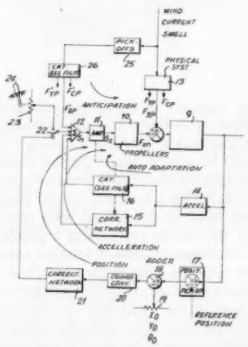
Franz Sernatinger, Mornac, and Maurice Abad, L'Isle D'Espagnac, both of France, assignors to Etat Francais, Paris, France

Filed Sept. 20, 1972, Ser. No. 290,516

Claims priority, application France, Sept. 21, 1971, 71.33836

Int. Cl. B63h *25/42*

U.S. Cl. 114—144 B **7 Claims**



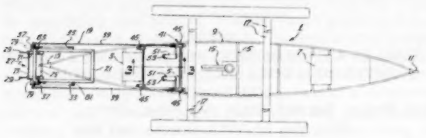
1. A dynamic positioning and steering system for a surface or submarine vehicle including a plurality of propellers, said system comprising position pick-off means, and accelerometer means on said vehicle to detect longitudinal, transverse and vertical accelerations as well as angular accelerations of the vehicle and which include wide passband accelerometer feedback means which produce voltages which insure quick positioning and oppose high frequency components of the disturbances, said feedback means performing as a position memory in case of a momentary absence of position data, said accelerometer means thus limiting the position pick-off means action to very low frequencies and continuous components thereby making it possible to optimize pick-off filtering, an external disturbance correction channel including means for wind, swell and current measurements, means for the computation of forces and r.-ments resulting from wind, swell and current, and servo-systems coupled to the latter said means in order to produce equivalent and opposite thrusts.

3,844,243

STEERING SYSTEM FOR CANOES AND THE LIKE

Dolphus D. Caton, 149 Beebe Ave., Elyria, Ohio 44035, and John R. Ralph, 2690 Harris Rd., Sheffield Lake, Ohio 44054

Filed Feb. 15, 1973, Ser. No. 332,674
Int. Cl. B63h 25/02
U.S. Cl. 114—153 6 Claims



1. A steering system for a boat such as a canoe or the like having an eyelet at one end thereof wherein such system may be attached to and removed from the boat without the physical alteration thereof, which system comprises, in combination:

a. a substantially rectangular-shaped frame,

b. means for detachably securing the frame substantially horizontally across the top of the boat wherein a portion of the frame is freely supported on the side rails thereof, said means including a removable shaft passing through the eyelet of the boat and extending laterally from either side of the eyelet for a total length equal to approximately one-half the width of the boat taken at its widest portion with the ends of the shaft being supported by the sides of the frame,

c. latching means associated with the frame for securing the shaft against accidental removal,

d. a rudder assembly pivotally secured to the frame for movement between a downward operative position and an upward inoperative position,

e. resilient means connecting the rudder assembly to the frame for biasing the rudder assembly in the downward operative position, and

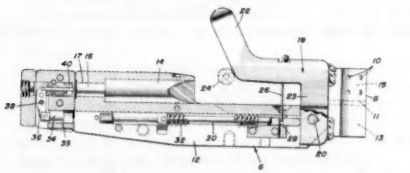
f. a rudder assembly control means detachably secured to the boat and connected to the rudder assembly for steering the boat.

3,844,244

MINE CABLE CUTTER WITH INDICATING DEVICE

William B. White, Chevy Chase, Md., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1956, Ser. No. 594,072
Int. Cl. B63b 43/00; B63c 7/16, 11/50
U.S. Cl. 114—221 A 13 Claims



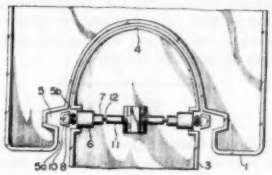
1. A combination mine cable cutter and indicating device comprising, a frame member, a combination anvil and hook member mounted on the frame in spaced, juxtaposed relation with one end of said frame, a cutter member movably mounted on said frame member and capable of movement in a line intersecting said combination anvil and hook member, means for forcibly driving said cutter member against said anvil upon the hooking of a mine cable, a buoyant indicating device so attached to said anvil as to be dislodged therefrom upon impact of said cutter member with said anvil when said cutter member is forcibly driven against the anvil.

3,844,245

MEANS OF CONNECTING PUSHER BOAT AND BARGE

Takuma Yamaguchi, Narashino, Japan, assignor to Taisei Sekki Komu K.K., Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 326,663
Claims priority, application Japan, Mar. 6, 1972, 47-022361
Int. Cl. B63b 21/62
U.S. Cl. 114—235 R 7 Claims



1. A combination of watercraft comprising:

a. a barge having a rear portion formed with a notch open in a rearward direction and with two vertically elongated channels open toward said notch and facing each other transversely of said direction;

b. a pusher boat having a bow portion of a configuration and size to be received in said notch;

c. two pressing shoes mounted on said bow portion; and

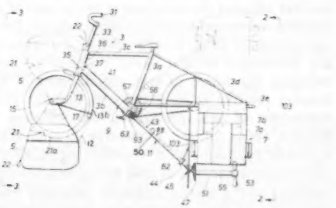
d. pressure-fluid-operated actuating means for moving said pressing shoes in respective, opposite directions between retracted positions outside said channels and inserted positions in said channels respectively while said bow portion is received in said notch, said actuating means holding said pressing shoes in frictional contact with said rear portion in said channels under sufficient pressure to prevent relative rotation between said pressing shoes and said rear portion when said pressing shoes are in the inserted position, said pressing shoes being rotatable on said bow portion to permit relative pitching movement of said barge and of said pusher boat.

3,844,246

AMPHIBIOUS BICYCLE

Benjamin Carter Locher, 164 E. E St., La Porte, Tex. 77571

Filed June 25, 1971, Ser. No. 156,903
Int. Cl. B60f 3/00
U.S. Cl. 115—2 19 Claims



1. In an improved cycle means of amphibious design which may be selectively converted from a first mode of operation

for travel over water to a second mode of operation for travel over land, and back to said first mode of operation comprising:

a frame having a steering means and first and second wheel means, said steering means operatively connected to said first wheel means for turning it; and propulsion means carried by said frame operatively connected to said second wheel means for causing rotation thereof;

pontoon means pivotally affixed to said frame adjacent each said first and second wheel means and being adapted to be fixedly, selectively positioned in a first location below the axis of rotation of each said wheel means and alternately in a second location substantially above the axis of rotation of said wheel means so as to thereby provide for mobility of the cycle in water when the pontoon means are in their first position and mobility on land when in their second position, and

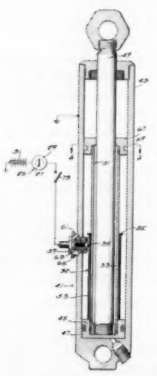
unitary, detachable aquatic drive and navigation means jointly coupled respectively to said propulsion means and said steering means when the said pontoon means are in their first position said drive and navigation means comprising means for laterally moving said aquatic drive for imparting navigational control.

3,844,247

TILT POSITION INDICATOR

Raymond D. Collis, Round Lake, and Martin H. Meyer, Libertyville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 4, 1973, Ser. No. 321,049
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 HT **1 Claim**



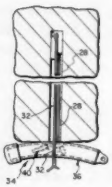
1. A marine propulsion device comprising a transom bracket adapted for attachment to the hull of a boat, a swivel bracket connected to said transom bracket for vertical swinging movement about a horizontal axis, a propulsion unit pivotally connected to said swivel bracket for common vertical swinging movement of said propulsion unit with said swivel bracket relative to said transom bracket and for swinging movement of said propulsion unit relative to said swivel bracket about an axis transverse to said horizontal axis, a hydraulic cylinder-piston assembly including a cylinder pivotally connected to one of said swivel bracket and said transom bracket, and a piston assembly pivotally connected to the other of said swivel bracket and said transom bracket and telescopically movable in said cylinder in response to vertical swinging movement of said swivel bracket and propulsion unit relative to said transom bracket, and means for indicating the position of said propulsion unit relative to said transom bracket comprising a gauge including an indicator movable in response to variation in electrical current, and a variable resistance electrically connected in series to said gauge and including a resistance coil mounted on one of said cylinder and said piston assembly, and a wiper mounted on the other of said cylinder and said piston assembly and movably electrically connected to said coil for varying the current flow to said gauge in response to movement in said cylinder of said piston assembly.

3,844,248

DEVICES AND PROCESSES FOR WARNING AGAINST IMPENDING ROCKFALLS IN UNDERGROUND EXCAVATION

Jack Parker, Box 465, White Pine, Mich. 49971

Filed May 22, 1973, Ser. No. 362,750
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **11 Claims**



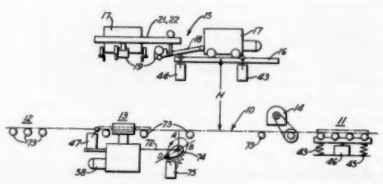
1. An alarm for warning of possible roof fall in an excavation, said alarm comprising: a chemiluminescent unit including at least a first container means, at least a first chemical reagent within said first container means, at least a second container means, at least a second chemical reagent within said second container means, said first container means and said second container means being in contiguity, the interiors of said first container means and said second container means being in communication for mixing said first chemical reagent and said second chemical reagent when subjected to an applied force, said first chemical reagent and said second chemical reagent being inactive when separate and being active when mixed to produce chemiluminescent light; anchor means for connection to a mine roof; and tie means extending between and mechanically connecting said anchor means and said chemiluminescent unit; whereby deformation of said chemiluminescent unit as a result of tension in said tie means as a result of said applied force causes mixture of said first chemical reagent and said second chemical reagent.

3,844,249

TRACER TYPE STRIPE PRINTING SYSTEM

Vincent P. Miller, Wilkins Township, Allegheny County, Pa., assignor to Miller Pottery Engineering Company, Swissvale, Pa.

Filed Mar. 17, 1972, Ser. No. 235,526
Int. Cl. B05c *11/00*
U.S. Cl. 118—2 **7 Claims**



1. Apparatus for printing stripes on relatively flat work pieces comprising a sheet moving device, a printing station

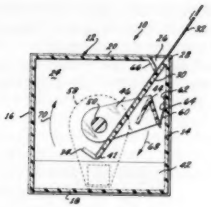
intermediate the ends of said device, means for stopping said device as each work piece thereon arrives at said printing station, at least one stripe printing mechanism mounted on a track above said printing station to traverse back and forth across each work piece at rest at said printing station, said printing mechanism including a pigment applying head at least vertically movable with respect to said track and said work pieces, template means guiding said pigment applying head as said printing mechanism traverses the printing station, the template means guiding said head vertically including means for supporting said printing head in raised position out of contact with said work piece in one direction of said traverse and means for lowering said printing head into contact with the work pieces in the opposite direction of said traverse, means for detecting and signalling the arrival of a blank work piece at said printing station, said signalling automatically stopping said sheet moving device, means controlling the traverse of the printing mechanism across said work blank interlocked with said signalling means to permit said traverse only when the blank is at the printing station and the device is at rest, means for detecting and signalling the completion of traverse of said printing mechanism, and second mentioned means for signalling interlocked with the controls for said device to permit said device to operate only when said printing mechanism is at rest.

3,844,250

APPARATUS FOR DEVELOPING FINGERPRINTS

Richard L. May, 816 Duncan Pl., Manhattan Beach, Calif. 90266

Filed Feb. 25, 1974, Ser. No. 445,352
Int. Cl. A61b *5/10*
U.S. Cl. 118—31.5 **3 Claims**



1. Apparatus for developing fingerprints on a fingerprint-carrying document, comprising:

a housing having a front wall, a rear wall, a bottom wall, a top wall, a first end wall and a second end wall, said top wall being provided with an elongated, document-receiving opening adjacent said front wall;

a fixed inclined platform depending from the top of said front wall into said housing along said opening and including cleat elements at the bottom thereof forming a ledge for supporting said document on the platform;

a V-shaped scoop substantially coextensive with the width of said housing and having a bracket provided at each end thereof;

a shaft rotatably mounted in said end walls and extending across said platform intermediate its upper surface and said top wall, one of said brackets being keyed to said shaft along each edge of said platform, whereby said scoop may be swung from a position beneath said platform to an inverted position above said platform;

said housing being adapted to contain a quantity of a fingerprint-developing material in the bottom thereof and in the path of said scoop as it travels from its position beneath said platform to said inverted position, whereby said scoop will scoop up said developing material and dump it onto said document when said document is in position on said platform; and

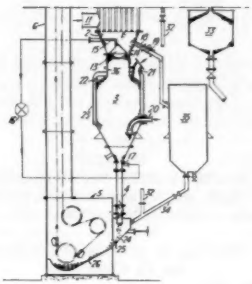
a crank connected to said shaft outside said housing for rotating said scoop.

3,844,251

VAPOR DEPOSITION APPARATUS

David Evans, and Alexander Bowen Simpson, both of Swansea, Wales, assignors to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 155,869, June 23, 1971, Pat. No. 3,779,795. This application Sept. 6, 1973, Ser. No. 394,820
Claims priority, application Great Britain, July 7, 1970, 32964/70
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 **6 Claims**



1. In a carbonyl decomposer adapted for production of metal pellets and having a calandria of preheater tubes, a collecting chamber disposed to receive pellets from the preheater tubes, a decomposition reaction vessel connected to the collecting chamber with a passage between the collecting chamber and the reaction vessel and means for circulating pellets from the reaction vessel to the preheater tubes and thence successively through the preheater tubes, collecting chamber and reaction vessel, the improvements comprising a collecting chamber wall shaped as a frustum of an inverted cone and a baffle disposed in the passage between the collecting chamber and the reaction vessel so as to define in combination with the collecting chamber wall a restricted passage opening wide enough to allow pellets to pass therethrough, said baffle having a baffle wall which is shaped as a hollow cone and mounted apex upwards and has a gas release means communicating with an upper portion thereof, adapted to direct pellets radially outwardly through the opening and into the vessel, and said collecting chamber wall having at least one opening connected to emergency drain means through a normally closed valve whereby said collecting chamber and said preheater may be quickly drained of pellets by opening said valve.

3,844,252

SHEET REMOVAL DEVICE

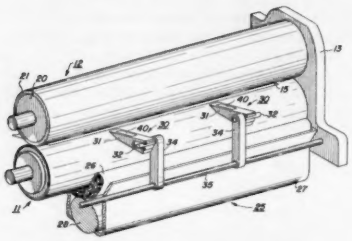
Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 21, 1973, Ser. No. 362,639
Int. Cl. G03g *13/08*
U.S. Cl. 118—60 **15 Claims**

1. In a reproduction machine wherein a developed electrostatic image is transferred to a suitable image bearing support sheet and permanently affixed thereto by heat-pressure means including a heated pressure roll, the improvement comprising: means applying a release agent coating to the heated pressure roll;

a blade-like element having a cutting edge formed along one side thereof; and

means for supporting said blade-like element in close proximity to an upper portion of the heated pressure roll with the cutting edge of the blade in a position to strip a support sheet moving therefrom, said blade having a recess



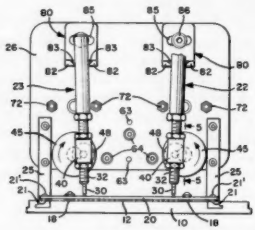
formed therein behind the cutting edge thereof and extending through the blade, said recess overlying a lower portion of the heated pressure roll whereby release agent removed from the roll by said blade is returned to the roll.

3,844,253

PHOTOGRAPHIC PRINT MARKER

Anthony F. Staub, and Norman T. Staub, both of c/o Dayton Scale Model Company 2661 Culver Ave., Dayton, Ohio 45429

Filed Dec. 3, 1973, Ser. No. 420,941
Int. Cl. G03d *15/04*
U.S. Cl. 118—242 **6 Claims**



1. A photographic print marker for placing index marks on continuous lengths of photographic paper for use by an automatic trimmer in trimming the individual prints therefrom, comprising in combination means forming a path over which said paper moves during printing, a ball point pen, means supporting said pen in adjacent relation to said paper including a rotatable support in which said pen is mounted in offset relation to the axis of rotation, means connected to rotate said pen support to bring said pen into contact with the back side of said paper adjacent the edge thereof and to cause said pen to move in a direction transverse to the length of said paper to provide a trim index mark on the paper in relation to an image thereon, which mark is impervious to the developing chemicals.

3,844,254

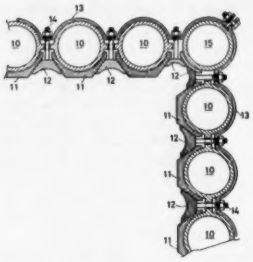
FURNACE HAVING WALLS DEFINED BY TUBE MEMBRANES

Ingmar Astrom, Stenungsund, Sweden, assignor to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co., Ltd.), Goteborg, Sweden

Filed June 1, 1973, Ser. No. 366,115
Claims priority, application Sweden, June 19, 1972, 8035/72
Int. Cl. F22b *37/00*
U.S. Cl. 122—6 A **1 Claim**

1. In a steam boiler furnace having parallel water tubes interconnected by welding to form tube membranes, said membranes being assembled to define a combustion chamber having quadrilateral cross section and being provided, at their faces turned towards the combustion chamber, with blocks of fire-resistant material secured by clamping means located outside the wall,

the improvement of a water tube located at each corner of the combustion chamber, said tube lacking permanent connection of the adjacent tube membranes;



block retaining clamping means extending over the pertaining corner tube and at least the outermost tube in each of the adjacent tube membranes thereby locking said corner tube to said adjacent membranes; and

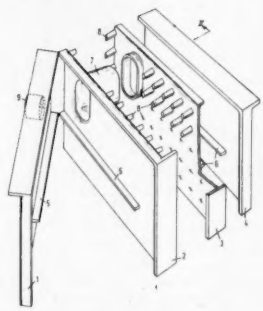
web-shaped blocks of fire-resistant material secured by said block-retaining clamping means to the faces of said corner tubes turned toward said chamber.

3,844,255

BOILER AND METHOD OF MAKING SAME

Gerardus Johannes Giesen, Tegelen, Netherlands, assignor to Blondu A.G., Vaduz, Liechtenstein

Filed June 19, 1972, Ser. No. 264,299
Int. Cl. F22b *7/00*; **B21d** *53/00*
U.S. Cl. 122—225 R **7 Claims**



1. In a method for making a boiler having at least one fire duct and at least one water duct, the improvement comprising the steps of: forming elements of the boiler by casting, the boiler comprising at least four elements, first and second of said elements being configured to define on one side of each thereof a segment of a water duct and on the other side a segment of a fire duct, joining said first and second elements together by welding to define therebetween said fire duct, the third and fourth elements being configured to define on one side of each thereof a segment of a water duct, joining by welding each of said third and fourth elements respectively to opposite sides of said first and second elements joined together to form said fire duct thereby to form a water duct on each side of said fire duct.

3,844,256

INTAKE PASSAGE-WAY OF A ROTARY INTERNAL COMBUSTION ENGINE

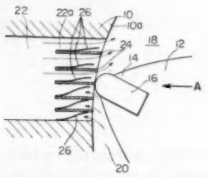
Yoshikazu Ishikawa, and Kazuaki Kobayashi, both of Tokyo, Japan, assignors to Nissan Motor Company, Kanagawa-ku, Yokohama City, Japan

Filed Oct. 17, 1972, Ser. No. 298,448

Claims priority, application Japan, Oct. 18, 1971, 46-96057; Apr. 3, 1972, 47-39338

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.45 5 Claims



1. An intake passageway for a rotary internal combustion engine having a housing provided with an epitrochoidal internal wall therein forming a cavity and a rotor rotatably disposed in said cavity, said rotor having a peripheral surface with a plurality of apex portions each of which has a radially movable apex seal sealingly engaging with the epitrochoidal internal wall of said housing to define a plurality of working chambers in said cavity, said intake passageway comprising an intake passage means formed in said housing and having an opening portion communicating with said cavity for supplying an air-fuel mixture into one of said working chambers, a plurality of partitions positioned in said opening portion of said intake passage means substantially in parallel to the flow of said air-fuel mixture passing therethrough and extending to the peripheral wall of the working chambers in working cooperation with the apex seal to prevent engine exhaust gases from other one of said working chambers from being sucked into said one of said working chambers, and a valve means for controlling an effective cross sectional area of said opening portion of said intake passage means.

3,844,257

ROTARY COMBUSTION ENGINE SPARK PLUG ARRANGEMENT

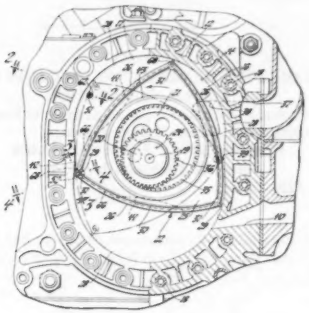
James H. Currie, Rochester, and Edward A. Rishavy, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 17, 1973, Ser. No. 389,383

Int. Cl. F02b *53/12*

U.S. Cl. 123—8.45 2 Claims

1. A rotary combustion engine comprising a rotor housing having an interior multi-lobed peripheral wall and a pair of end housings having oppositely facing interior side walls cooperatively defining a cavity, an output shaft rotatably mounted in said end housings having an eccentric located in said cavity, a multi-corner rotor rotatably mounted on said eccentric having sides opposite said side walls and a plurality of peripheral faces opposite said peripheral wall, said rotor faces and housing walls cooperating to provide a plurality of working chambers that are spaced about and move with said rotor within said rotor housing while varying in volume as said rotor planetates, gas seal means mounted on said rotor for sealingly contacting said housing walls to seal said working chambers from each other, said gas seal means including an apex seal mounted on each rotor apex with an outer edge sealingly contacting said peripheral wall and ends opposite said side walls and side seals mounted on each rotor side sealingly contacting the opposite side wall with each said side seal extending adjacent one of said rotor faces between two of said rotor corners and corner seals mounted on each rotor side at the corners thereof sealingly contacting the opposite side wall with each said corner seal sealingly joining one of said apex seals and two of said side seals, an intake port in one of said housing walls located so that said working chambers are sequentially periodically opened by said rotor past said gas seal means to said intake port as said rotor planetates, an exhaust port located in one of said housing walls so that said working chambers are sequentially periodically opened by said rotor past said gas seal means to said exhaust port as said rotor



planetates, a spark plug spark access hole smaller in area than the ends of said corner seals located adjacent said peripheral wall in one of said side walls opposite one side of said rotor in a position so that as said rotor planetates said spark access hole is periodically opened to said working chambers by said rotor radially outward of said side seals and is also periodically traversed and completely closed by said one rotor side at the corners thereof cooperating with said corner seals on said one rotor side to thereby prevent leakage between adjacent working chambers through said spark access hole as said apex seals pass said spark access hole.

3,844,258

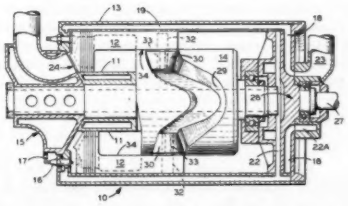
INTERNAL COMBUSTION ENGINE

Roy M. Howell, 115 Meadbrook Rd., Garden City, N.Y. 11530

Filed Jan. 29, 1973, Ser. No. 327,752

Int. Cl. F02b *57/00*, *75/04*

U.S. Cl. 123—43 AA 3 Claims



1. In an internal combustion engine having a plurality of axially extending cylinders in a cylinder block disposed for rotation about a cylindrical cam and follower means engaged by said cam and connected to respective pistons in said cylinders, the improvement which comprises said cam having a track surface engaged by said follower means, said track surface having a shape related to the timing of the operating cycle of the engine and which varies the stroke of said pistons

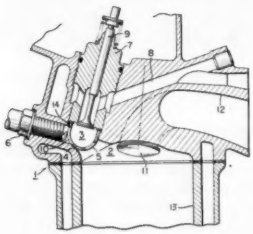
in accordance with said operating cycle to reduce the effective combustion chamber volume in said cylinders during the exhaust portion of the cycle to a volume less than that at the end of the compression part of the cycle to aid in the expulsion of exhaust gases from said cylinders; said cylinders and pistons being located at a given radial distance from the axis of cylinder block rotation and said cam extending radially beyond said distance, said pistons having skirts accommodating the movement of the pistons in overlapping relation to said cam, said piston skirts being disposed for wiping contact engagement with the cam to stabilize the pistons against rotary movement relative to the cylinders from positions of alignment with respect thereto.

3,844,259

AUXILIARY CHAMBER CONSTRUCTION FOR INTERNAL COMBUSTION

Urataro Asaka, Kamifukuoka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1972, Ser. No. 310,406
Int. Cl. F02b *19/10, 19/16*
U.S. Cl. 123—32 SP **2 Claims**



1. In an internal combustion engine, the combination of: walls forming a main combustion chamber, walls forming a cavity for an auxiliary combustion chamber, a thin wall metallic cup formed of heat resistance material positioned in said cavity, said cup having a round bottom closing said cavity with respect to said main combustion chamber, a portion of said round bottom being exposed to said main combustion chamber, a spark plug supported near said cup having its electrodes outside said cup, said cup having a first aperture in said round bottom communicating with the main combustion chamber and a second aperture communicating with the spark plug electrodes, the interior of the cup comprising an auxiliary combustion chamber, valve means for introducing a lean combustible mixture into the main combustion chamber, and additional valve means for introducing a rich combustible mixture into the interior of said cup.

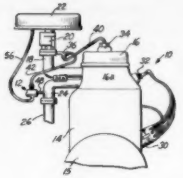
3,844,260

EXHAUST GAS RECIRCULATING VALVE

Milford M. Scott, Jr., Las Vegas, Nev., and Floyd J. Wheeler, Jr., Marina Del Rey, Calif., assignors to STP Corporation, Ft. Lauderdale, Fla.

Filed Nov. 1, 1972, Ser. No. 302,935
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **26 Claims**

1. In an internal combustion engine that uses the compressing of a fuel-air mixture comprising an exhaust manifold means, intake manifold means and carburetor means, exhaust gas recirculating means for regulating the flow of a portion of the exhaust gases from the exhaust manifold to the intake manifold in automatic self-response to atmospheric pressure, intake manifold pressure and exhaust manifold pressure, so as to reduce the formation of pollutants formed within the internal combustion engine, the improvement wherein said recirculating means includes an exhaust gas recirculating valve



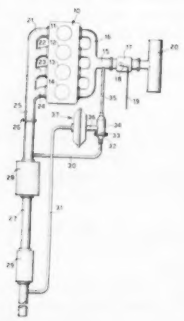
being open to fresh air from the carburetor means and having plate valve means for controlling the flow of the exhaust gases and/or fresh air, and terminate flow of exhaust gas to the carburetor means during selected modes of engine operation.

3,844,261

DEVICE FOR REGULATING THE RATE OF FLOW OF RECYCLED EXHAUST GASES IN AN INTERNAL COMBUSTION ENGINE

Giampaolo Garcea, Milan, Italy, assignor to Alfa-Romeo S.p.A., Milan, Italy

Filed Feb. 5, 1973, Ser. No. 329,822
Claims priority, application Italy, Feb. 8, 1972, 20344/72
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **7 Claims**



1. An internal combustion engine provided with an intake duct, an exhaust duct and an auxiliary piping connected to said exhaust duct to draw a portion of the gases flowing therethrough to discharge them into said intake duct, the improvement including first means sensitive to a pressure drop undergone by the gases which flow through at least a portion of the exhaust duct, second means operably related to the first means and sensitive to a predetermined pressure drop undergone by the gases when flowing through a portion of said auxiliary piping and a member for throttling in a variable manner said auxiliary piping, said member being driven by said first and said second means in the sense of keeping proportional the respectively sensed pressure drops.

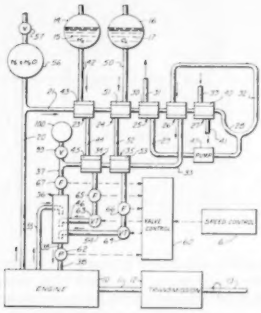
3,844,262
VAPORIZATION OF EXHAUST PRODUCTS IN HYDROGEN-OXYGEN ENGINE

Paul Bertrand Dieges, 1051 Davids Rd., Perris, Calif. 92370

Continuation-in-part of Ser. No. 79,473, Oct. 9, 1970. This application June 20, 1973, Ser. No. 371,675

Int. Cl. F01k *17/02*; **F01f** *3/20*

U.S. Cl. 128—119 A **4 Claims**



1. In an open cycle internal combustion engine, which has one or more combustion chambers in which the pressure and volume varies in a cyclic manner to produce work, an intake to admit a combustible charge, a means to ignite the combustible charge, an exhaust to remove the combusted charge, a means to seal the combustion chamber from the crankcase, and a means to cyclically seal the combustion chamber's intake and exhaust, a fuel system comprising a mixing passage and conduit means from said mixing passage to said intake, a first source of gas comprising oxygen as a fuel, a supply line and a throttle valve therein, from said first source to the mixing passage, a second source of gas comprising hydrogen as a fuel, a supply line and a throttle valve therein, from said second source to the mixing passage, the ratio of gases of the types supplied from said first and second sources is at the stoichiometric ratio of said gases, a surplus gas filling the various passageways of the system which when combined with the gases from said first and second sources in said mixing passage forms said combustible charge, a passageway for said surplus gas and water of combustion from said exhaust to a water separating device in said passageway, said water separating device is comprised of a condenser and a trap, adapted to liquify said water of combustion, and to separate said surplus gas from said water of combustion, a surplus gas return line for said surplus gas leading from said water separating device to said mixing passage to maintain said surplus gas in the system, a liquid water line from said water separating device to a heat exchanger, said heat exchanger being in heat exchange relationship between said liquid water line and said passageway and being designed to raise the temperature of said liquid water to a point below boiling, and a liquid water discharge line from said heat exchanger open to the atmosphere.

3,844,263
SUPERCHARGE-TYPE FUEL INJECTION CONTROL SYSTEM

Kunio Endo, Anjo, and Kunihiko Negi, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan

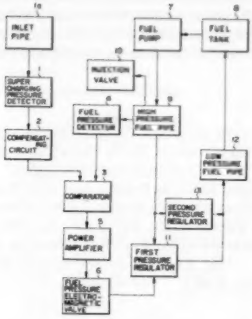
Filed Aug. 3, 1973, Ser. No. 385,340

Claims priority, application Japan, Aug. 7, 1972, 47-79337

Int. Cl. F02m *51/00*

U.S. Cl. 123—119 C **2 Claims**

1. A supercharge-type fuel injection control system comprising a supercharging pressure detector for detecting the supercharging pressure in an inlet pipe which is varied by a supercharging function, fuel pressure detector for detecting the pressure of fuel to be injected, a comparator for comparing the outputs of said detectors, a fuel pressure regulating electromagnetic valve in a first pressure regulator adapted to



be opened and closed in accordance with the output of said comparator to control said fuel pressure, and fuel injection valve means for injecting fuel in accordance with said regulated fuel pressure.

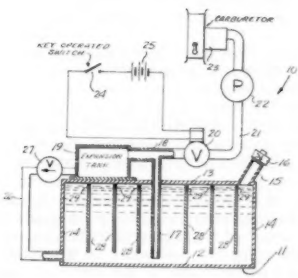
3,844,264
ANTI-POLLUTION FUEL SYSTEM

Lewis M. D. Grainger, Rt. 1, Glen Allen, Va. 23060

Filed Nov. 9, 1972, Ser. No. 304,933

Int. Cl. B65d *25/00*; **F02m** *59/00*

U.S. Cl. 123—136 **1 Claim**



1. In a normally sealed anti-pollution fuel supply system for a vehicle including an ignition switch and a battery, a fuel tank having a bottom wall, top wall, and side walls extending therebetween, a gooseneck filler pipe connected to said top wall and closed with a removeable cap that is sealed to prevent the flow of gases upwardly through the gooseneck and out to the atmosphere through the cap, a one-way valve positioned in said cap permitting the flow of air inwardly through the cap to the tank to relieve any vacuum occurring therein, a fuel line extending downwardly through the top wall and terminating at a point just above the bottom wall, said fuel line being connected to the center of a tee, an expansion tank supported on the top wall and connected to one side of said tee, a magnetic valve being connected to the other side of the tee, a fuel pump and a carburetor, a fuel line connecting the fuel pump and carburetor to the magnetic valve, the ignition switch of the vehicle being connected in circuit with the battery to the magnetic valve so as to open the magnetic valve whenever the switch is closed and to permit the valve to close whenever the

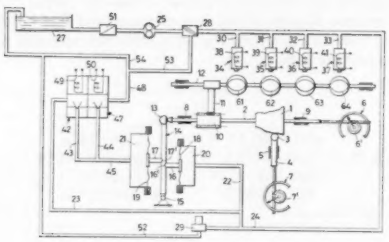
switch is open, a drain line extending from the bottom of the expansion tank to the bottom portion of a side wall of the fuel tank and communicating with the tank adjacent the bottom thereof, said drain line having a one-way valve therein to permit the flow of fuel collected in the expansion tank through the drain line into the tank when the pressure in the tank is low enough to permit a flow into the tank, said cap in addition to permitting a flow of air into the tank as needed, also acting as a safety valve to open outwardly when the pressures in the fuel system become so great as to completely fill the expansion tank.

3,844,265

DEVICE FOR REGULATING THE AMOUNT OF FUEL INJECTED BY INJECTION SYSTEMS OF INTERNAL COMBUSTION ENGINES

Filippo Surace; Edoardo Rogora, and Aldo Bassi, all of Milan, Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Feb. 24, 1972, Ser. No. 228,920
Claims priority, application Italy, Feb. 24, 1971, 20985/71
Int. Cl. F02b *3/00*; F02m *39/00*
U.S. Cl. 123—139 E **12 Claims**



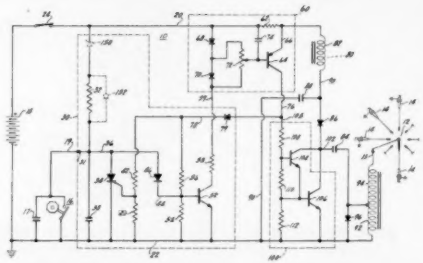
1. A device for regulating the amount of injected fuel for injection systems of internal combustion engines, comprising a first member defined by a spatial cam and a second member defined by a follower maintained in engagement with the spatial cam surface, said two members being connected to the body of the device so as to allow two degrees of freedom in total to said two members, the follower being allowed an additional degree of freedom so as to be allowed to carry out displacements in the direction of the cam rises, said two degrees of freedom permitting relative displacements of the point of contact of the follower with the cam surface along two corresponding directions which are perpendicular to one another and perpendicular to the cam rises, said follower acting on component parts of the injection system which are enabled to vary the amount of injected fuel as a function of the position of said point of contact with respect to the cam surface, first means controlling, as a function of the engine speed of rotation, the relative displacement of the point of contact with respect to the cam surface along the first of the two directions, and second means controlling the relative displacement along the second of the two directions as a function of a parameter representative of the engine operation of the throttle angle, the improvement that said first means comprise a first mechanical-electrical transducer, a second electrical-mechanical transducer, a feed-back unit consisting of a third mechanical-electrical transducer and of a comparison element, the input of the first transducer being mechanically coupled to the mainshaft and its output being electrically connected to the comparison element, the input of the third transducer being mechanically coupled to said first member and its output being electrically coupled to said comparison element, the input of said second transducer being electrically coupled to the comparison element, while the output is mechanically coupled to said first member.

3,844,266

CAPACITOR DISCHARGE IGNITION CIRCUIT

Donovan F. Peterson, 655 Meadows Ln., Elm Grove, Wis. 53122

Filed Oct. 10, 1972, Ser. No. 296,059
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 ICD **27 Claims**



1. A capacitor discharge ignition circuit for intermittently supplying electrical pulses to a spark plug energization means from a primary electrical source, said circuit being triggerable by periodic operation of a switch means and comprising:

an inductor connectable to one side of the primary electrical power source for generating electrical energy in said inductor responsive to current flow therethrough;

a capacitor connected in series with said inductor and connectable to the spark plug energization means and to the other side of the primary electrical power source for receiving and storing the electrical energy generated in said inductor;

semiconductor means including an output circuit having conductive and non conductive states and a signal responsive input circuit for controlling the duration of the conductive state of the output circuit in accordance with the duration of a conduction signal applied to the input circuit, said output circuit being connected intermediate said inductor and capacitor and in parallel with the series connected capacitor and spark plug energization means for providing a discharge path for the stored electrical energy of the capacitor into the spark plug energization means when in the conductive state, said output circuit permitting the transfer of electrical energy from said inductor to said capacitor when in the non conductive state;

an input logic circuit having an input connectable to the switch means for providing an output signal upon the operation of the switch means; and

sensing means having an output connected to said semiconductor means input circuit, said sensing means having an input connected to said input logic circuit and being responsive to said output signal for initiating a conduction signal to said semiconductor input circuit, said sensing means input being further coupled to said inductor and being responsive to the magnitude of current flow through the inductor for terminating the conduction signal to said semiconductor input circuit when the current flow through said inductor reaches a predetermined magnitude.

3,844,267

TENNIS BALL PITCHING APPARATUS WITH ANTI-JAMMING BALL FEED MECHANISM

Joseph J. Mohr, 1200 Cardiff Dr., Encinitas, Calif. 92024

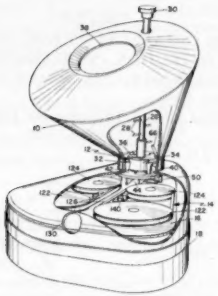
Filed May 7, 1973, Ser. No. 357,907
Int. Cl. F41b *15/00*
U.S. Cl. 124—1 **7 Claims**

1. Apparatus for propelling individual balls from a randomly arranged quantity of balls at pre-determined intervals, includ-

ing a storage hopper and apparatus for accelerating and releasing the balls wherein the improvement comprises:

a ball selector connected to said storage hopper and comprising a substantially cylindrical body having at least one peripheral axial aperture of sufficient size to permit one of said balls to pass vertically through said aperture,

drive means for rotating said selector,



said selector being positioned above a ball delivery opening, said ball delivery opening communicating with a corridor comprising means for delivering said balls to said apparatus for accelerating and releasing balls,

clutch means for disengaging said drive means from said ball selector at a predetermined torque, and for subsequently imparting a reverse rotation to said selector and re-engaging said drive means with said selector.

3,844,268

ARCHERY BOW HAVING INTEGRALLY MOLDED FEATURES

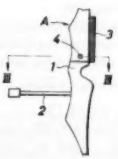
Fumihiro Ikeya, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Claims priority, application Japan, Dec. 1, 1974, 46-96905

Filed Nov. 21, 1972, Ser. No. 308,511

Int. Cl. F41b *5/00*

U.S. Cl. 124—24 R **2 Claims**



1. An archery bow comprising a bow body and sight attaching means for supporting a sight, said sight means comprising a guide rail formed of the same material as the bow and formed during the molding of the bow to preserve the strength of the bow and said guide rail extending from the belly side of the bow forming a T-shaped rail, said T-shaped rail lying along the belly side of the bow so that a sight may be attached thereto.

3,844,269

APPARATUS FOR SAWING ROCK

Rudolph Rater, 23020 Marine View Dr., Des Moines, Wash. 98016

Filed July 25, 1972, Ser. No. 274,849

Int. Cl. B28d *1/04, 7/04*

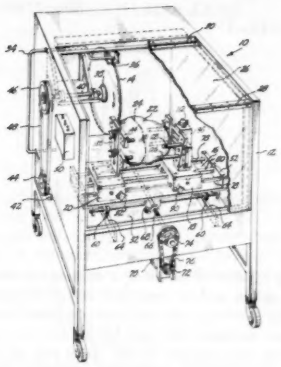
U.S. Cl. 125—13 R **9 Claims**

1. Sawing apparatus for accurately severing a rock on a selected cutting line comprising:

fixed rotary saw means;

carriage means movable longitudinally toward and away from said saw means;

rock holding means mounted on said carriage, said rock holding means comprising first rock gripping means mounted on said carriage to grip said rock at points on one side of said cutting line and second rock gripping means mounted on said carriage to grip said rock at points on the opposite side of said cutting line, said first and second rock gripping means being transversely mov-



able with respect to each other on said carriage, and said first rock gripping means being rotatable with respect to said carriage and said second rock gripping means;

said first and second rock gripping means making gripping contact with said rock only at points transversely spaced from said cutting line whereby said saw can completely sever said rock without contacting said rock gripping means; and

said rock holding means supporting said rock to restrain transverse movement thereof to prevent said rock from binding on said saw during or after severing.

3,844,270

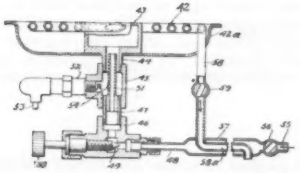
ENERGY CONVERSION SYSTEM

Robert B. Black, 2925 Denver St., Corpus Christi, Tex.

Continuation-in-part of Ser. No. 61,775, Aug. 6, 1970, Pat. No. 3,669,079. This application Oct. 26, 1971, Ser. No. 192,262

Int. Cl. F24h *3/02*

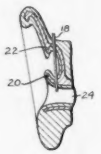
U.S. Cl. 126—110 R **22 Claims**



1. Equipment for use in heating solid, liquid or gaseous materials, comprising a tubular burner element having inlet and discharge ends and having its outside surface directly exposed to the material to be heated, a supply line of a pressurized gaseous mixture of fuel and air connected with the inlet end of the tubular burner element, an adjustable pressure reducing valve in the supply line, fuel ignition means between the said valve and the inlet end of the tubular burner element,

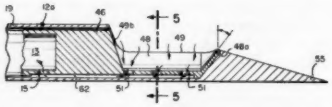
an exhaust pipe for delivering products of combustion from the discharge end of the tubular burner element, and an adjustable choke valve in the exhaust pipe, the exhaust pipe being in heat exchange relation with the supply line.

3,844,271
METHOD OF INSTALLING A HEARING AID
James Douglas Lake, 135 E. 54th St., New York, N.Y. 10022
Continuation of Ser. No. 93,024, Nov. 27, 1970, abandoned. This application Jan. 11, 1973, Ser. No. 322,763
Int. Cl. A61b *17/32*; **H04r** *25/00*
U.S. Cl. 128—1 **4 Claims**



1. The method of installing a hearing aid having a microphonic pickup and an amplifier and a transducer with the microphonic pickup and amplifier combined into a unit which comprises: mounting the unit behind the ear, supporting the transducer only directly in the outer end of the ear canal, electrically connecting the output side of the amplifier to the input side of said transducer by a single tubular connector element which includes wires and adapted at the opposite ends for detachable connection to said amplifier and transducer respectively, piercing the outer ear from the outside thereof to the inside in a normally concealed location in a region of the outer ear near the juncture of the outer ear and the head and on the opposite side of the helix of the ear from the ear canal to form at least one hole through the outer ear, and passing said tubular connector element from the output side of said amplifier through said hole to the input side of said transducer.

3,844,272
SURGICAL INSTRUMENTS
Anton Banko, 1496 Mayflower Ave., Bronx, N.Y. 10461
Continuation-in-part of Ser. No. 799,476, Feb. 14, 1969, Pat. No. 3,732,858, which is a continuation-in-part of Ser. No. 762,286, Sept. 16, 1968, Pat. No. 3,528,425. This application Apr. 4, 1972, Ser. No. 241,019
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 B **21 Claims**

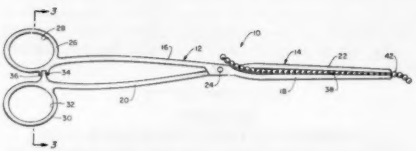


1. A surgical instrument comprising a first tubular member having a first active cutting means thereon, a second tubular member having a second active cutting means thereon, said first and second tubular members being concentric with each other, means for rotating said first and second members relative to each other to bring said first and second active means into an active relationship to cut an object, said second active means including a pocket formed at the end of said second active means having a cutting edge formed around at least a portion thereof, said first member having a portion of its first active means formed of a shape complementary to the pocket formed on said second member and including a cutting edge formed around at least a portion thereof, and means for applying suction including a first passage formed in said second member adapted to receive suction from a source, at least one opening in said second member through a wall thereof into its pocket, and a second passage between said first and second members to provide communication between said first passage and said opening.

3,844,273
METHOD AND APPARATUS FOR ANIMAL HEAT DETECTION AND RECORDING
Jerry H. Polson, Boulder, Colo., assignor to Contel Corporation, Boulder, Colo.
Filed Apr. 24, 1972, Ser. No. 246,681
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 R **29 Claims**

1. Apparatus for identifying female animals in heat comprising:
- activating means responsive to a manifestation reflecting the occurrence of a state of standing heat in a female animal;
- transmitting means connected to said activating means for transmitting a signal from said animal to a place remote there from when said activating means responds to said manifestation reflecting the occurrence of a state of heat in said female animal, said transmitting means being contiguous to said female animal;
- receiving means for receiving the signal transmitted by said transmitting means; and
- indicating means connected to said receiving means to provide an identification of the female animal indicated by said transmitted signal to be in standing heat.

3,844,274
INSTRUMENT FOR INSERTING BEAD CHAIN INTO URETHEA AND BLADDER
Joel E. Nordstrom, 85 Vistalago Dr., Simi, Calif.
Filed Nov. 10, 1972, Ser. No. 305,292
Int. Cl. A61b *10/00*, *17/28*
U.S. Cl. 128—2 M **9 Claims**



1. A medical instrument to insert a bead chain into a patient's bladder comprising:
- a first elongated member having an operating end and an operational end;

a second elongated member having an operational end and an operational end;

connecting means to pivotally connect together said first and said second members intermediate said ends;

each of said operating ends including first means for facilitating manual pivoting of said members about a pivot axis with respect to each other; and

each of said operational ends includes second means for facilitating the retention of a bead chain, said second means comprises a longitudinal recess formed within both said members, such both said recesses extending substantially the entire length of its respective operational end, each said recess being a uniform depth and width along said entire length of its respective operational end, each of said operational ends being curved so as to result in a smooth contour to facilitate locating of said medical instrument within the urethra, said pivot axis lying within the plane of said curve.

3,844,275

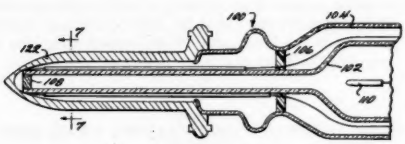
NEEDLE AND STERILIZING APPARATUS THEREFOR

John Elliott, Philadelphia, Pa., assignor to Angelica Elliott, London, England

Continuation-in-part of Ser. No. 148,869, June 1, 1971, abandoned. This application Feb. 23, 1972, Ser. No. 228,620

Int. Cl. A61b *5/00*

U.S. Cl. 128—2.1 E **11 Claims**



1. Apparatus for performing in vivo measurement comprising:

an electrolyte solution,

hollow tube means for containing said electrolyte solution and having an open end,

a reference electrode extending within said hollow tube means,

means for sealing said open end so that said reference electrode in said tube means when in use will be in electrical connection, via said electrolyte solution, with an in vivo solution which is exterior to said tube means about said open end,

a plurality of different electrodes disposed circumferentially about and connected to said tube means exterior to said tube means and each extending to a location adjacent said open end of said tube means so that each said electrode will be in electrical connection with said electrolyte solution via said sealing means and said in vivo solution, and

a plurality of output wires each connected to one of said electrodes.

3,844,276

PROBE AND METHOD FOR DETECTING ESTRUS IN ANIMALS

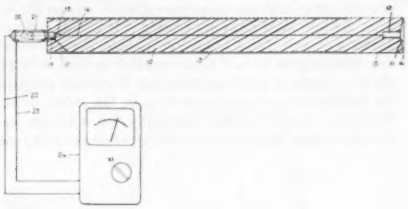
John Edgar McDougall, 285 Briarhill Rd., Woodstock, Ontario, Canada (N4S7T4)

Filed July 19, 1973, Ser. No. 380,895

Int. Cl. A61b *5/04, 10/00*

U.S. Cl. 128—2.1 E **10 Claims**

1. A probe for detecting estrus, comprising a smooth cylindrical rod insertable into the vagina of an animal and sufficiently long to touch the cervix with one end of the rod, said one end having a concavity bounded by a rim, a first electrode in said cavity and exposed at said one end providing a means that is in contact with cervical mucus but being located within the concavity and spaced rearwardly of the rim so as to be out of contact with tissue of the animal when the rod is slightly withdrawn to a position away from the cervix,



a second elongated electrode along the outside surface of the rod spaced from said one end and held by the rod snugly against the vaginal wall and electrically insulated from the first electrode, and an electrical connection for each of said electrodes at the other end of the rod adapted to be connected to a resistance measuring means.

3,844,277

RUBBING AND MASSAGE APPARATUS

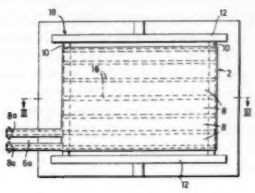
Karl-Heinz Pahl, Leuchtenberger Kirchweg 101, Duesseldorf-Nord, Germany

Filed Feb. 15, 1973, Ser. No. 332,939

Claims priority, application Germany, Feb. 19, 1972, 2207925

Int. Cl. A61h *7/00*

U.S. Cl. 128—63 **24 Claims**



1. Apparatus for rubbing and massaging the human body by means of a cloth-shaped rubbing material, which comprises a rubbing material which is disposed so as to form a surface and subdivided into a succession of webs extending substantially parallel with respect to one another, and means for driving alternate webs in one direction, the intermediate webs in opposite direction and for alternating the directions in which said webs are driven.

3,844,278

HYDROTHERAPEUTIC MASSAGE DEVICE

Benjamin Weider, Hampstead, Quebec, Canada, assignor to Internax Holdings Limited, Nassau, Bahamas

Filed Jan. 26, 1973, Ser. No. 327,023

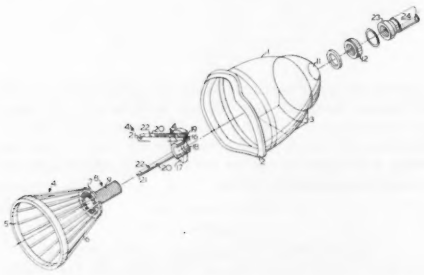
Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **7 Claims**

1. A hydrotherapeutic massage device, comprising:

a bell-shaped housing with a substantially frusto-conical basket for receiving a bust, said basket being disposed within said housing substantially coaxially with the same, said basket having an opening, a side portion, and a bot-

tom portion; and jet arms being substantially straight and being arranged for a rotary movement to circumscribe a substantially frusto-conical surface disposed between said housing and said side portion of the basket, said jet arms being provided with conduit means for connecting the same with a source of pressurized water, wherein at least one of said jet arms is provided with jets arranged to provide for at least two directions of water stream flowing from the arm, said directions being oriented at different angles with regard to a plane substantially parallel to said arm and tangent to said frusto-conical surface, whereby the flow in one of said directions can be utilized primarily for driving the arm, and the flow in the other of said directions can be utilized primarily for massage, said conduit means including a tubular conduit provided with



a connector for connecting said tubular conduit to a tap, said tubular conduit being a hose and wherein said connector comprises:

a flexible tubular body, one end of said body being adapted to be fixed to said hose, the inner portion of said tubular body defining a plurality of coaxial substantially cylindrical sections disposed axially one after the other and increasing in diameter from said one end whereby the diameter of the section closest to said one end is smallest and that of the section most remote from said one end is largest, said connector including a flexible clamp means for securing the selected section of the connector to the tap, said connector also including an adapter having male and female threads at opposite ends to adapt to taps having either male or female threads.

3,844,279

ADJUSTABLE LEG BRACE

Robert L. Konvalin, Livingston Manor, Livingston Manor, N.Y. 12758

Filed May 14, 1973, Ser. No. 360,246

Int. Cl. A61f *3/00*

U.S. Cl. 128—80 F **12 Claims**

1. An adjustable leg brace for rapid and precise attachment to the leg of a user, which comprises:

a. clamping means to engage the foot of the user;

b. a horizontal adjustment member mounted on the clamping means and having a receptacle defined therein;

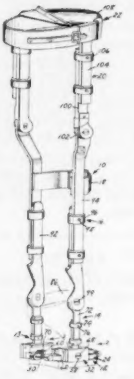
c. ankle upright means received within the receptacle the horizontal length of the upright means being less than the horizontal length of the receptacle; the ankle upright means including means to vary its vertical height;

d. the horizontal adjustment member including means to secure the ankle upright means at a precise desired longitudinal position with the receptacle;

e. an ankle joint secured to the upper end of the ankle upright means, the vertical adjustment and the horizontal positioning of the ankle upright means locating the ankle joint at the exact anatomical axis of the ankle;

f. calf upright means secured to the ankle upright means at the ankle joint;

g. calf engagement means attached to the calf upright means grasping the calf of the user;



h. a T-bar, said horizontal adjustment member having means receiving said T-bar; and

i. an ankle support strap including a buckle and lip portion to be adjustably secured to the ankle of the user, said lip secured to the lower edge of the support strap, the lip engaging the T-bar to provide additional support.

3,844,280

MEDICAL VENTILATOR INCLUDING A FAIL-SAFE DEVICE

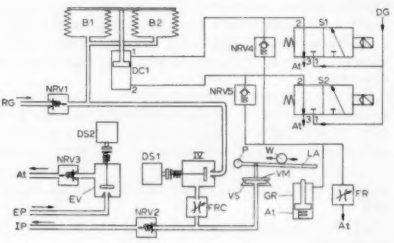
George Edward Smythe, Wallington, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,720

Claims priority, application Great Britain, Aug. 19, 1971, 38980/71

Int. Cl. A61m *16/00*

U.S. Cl. 128—145.6 **7 Claims**



1. A time-cycled medical ventilator comprising a source of respiratory gas to be supplied to a patient, pneumatically driven bellows connected to said source of respiratory gas for supplying the pressure required to move said respiratory gas into the lungs of the patient, operating means connected to said bellows for causing said bellows to alternately distend and compress in accordance with the time cycle, control means connected to said operating means for controlling flow of driving gas in accordance with said time-cycle to said operating means to effect operation thereof, a source of driving gas for supplying said driving gas at higher than atmospheric pressure to said control means, an inspiration gas passage for supplying respiratory gas to a patient, an inspiratory gas valve

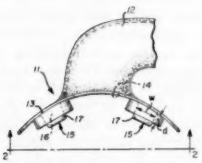
connected on an inlet side thereof to said source of respiratory gas for controlling the flow of respiratory gas to the patient through said inspiration gas passage connected on the outlet side of said inspiratory gas valve, an expiration gas passage for receiving respiratory gas from a patient, an expiratory gas valve connected on the inlet side thereof to said expiration gas passage for controlling flow of respiratory gas from the patient, electrically driven valve operating means connected to each of said gas valves for controlling operation thereof, a pressure relief valve connected to said inspiration gas passage on the outlet side of said inspiratory gas valve arranged for opening so as to vent said passage to atmosphere and relieve excess pressure in said inspiratory gas passage when the gas pressure therein reaches a predetermined value, detecting means responsive to the pressure of said driving gas, means connected to said detecting means for opening said pressure relief valve when the pressure of said driving gas drops to atmospheric pressure for a period of time in excess of a predetermined period so as to connect said inspiration gas passage to the atmosphere and allow the patient to breathe independent of the ventilator.

3,844,281

CUSTOMIZED MOUTHPIECE RETAINER FOR AN UNDERWATER BREATHING APPARATUS

Ralph B. Shamlian, San Francisco, Calif., assignor to Farallon Industries Inc., Belmont, Calif.

Filed Oct. 2, 1973, Ser. No. 402,720
Int. Cl. A63b *7/00*
U.S. Cl. 128—147 **7 Claims**



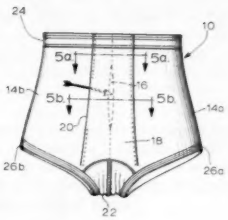
1. A mouthpiece to be used in combination with underwater breathing apparatus that supplies breathable gas to a subject through a conduit, said mouthpiece comprising a pliable flange means for insertion between the lips and the outer frontal surface of the teeth of the subject, said flange means having a breathing hole adapted to be connected in fluid flow relationship with the conduit for passing the gas in a substantially unobstructed flow path into the mouth and through the teeth of the subject, said flange means extending on opposite sides of the breathing hole, a pair of tabs connected to and extending substantially normal from the flange means in a direction away from the conduit, said tabs being located on opposite sides of the breathing hole and spaced therefrom, the improvement comprising: means on each of said tabs for retaining teeth, each of said teeth retaining means including means for receiving only the several top and bottom teeth behind the front teeth of the subject and being fabricated of a thermoplastic material having sufficient thermoplasticity at elevated temperatures which are compatible with the mouth of the subject for gripping by the teeth of the subject while at such elevated temperature and while in a thermoplastic state to form an impression of the bite of the subject in the thermoplastic material, such impression being retained upon cooling of the thermoplastic material to human body temperature, whereby the retaining means of the mouthpiece is customized to the bite of the individual subject, the flange means being fabricated of a material that is less plastic than the retaining means at such elevated temperature, said retaining means being spaced from edges of the breathing hole so as not to interfere with the flow of gas through the hole into the mouth of the subject.

3,844,282

KNIT BOXER SHORTS

Frederick E. King, Merrick, N.Y., assignor to Jockey International, Inc., Kenosha, Wis.

Filed May 25, 1973, Ser. No. 363,833
Int. Cl. A41b *9/02*
U.S. Cl. 128—159 **7 Claims**



1. A boxer short formed from a fabric having a major direction of stretch comprising:

a rear panel of fabric having a laterally oriented major direction of stretch;

a pair of front panels of fabric having a laterally oriented major direction of stretch, said front panels being joined along an exterior side thereof to said rear panel and being joined along a central side thereof to one another, the joined central sides of said front panels having an unjoined portion defining an internal fly opening;

a facing panel of fabric having a laterally oriented major direction of stretch, said facing panel being joined to said front panels along vertical edges thereof and overlying the internal fly opening in said front panels, one vertical side of said facing panel being unjoined along a portion thereof to define an external fly opening; and

a shaped pouch section of fabric having a laterally oriented major direction of stretch, said pouch being joined along said front panels and facing panel and along said back panel to form a crotch in said short, said facing panel extending from said pouch section to a top portion of said front panels.

3,844,283

APPARATUS FOR ASEPTICALLY DISPENSING A MEASURED VOLUME OF LIQUID

William C. Dabney, Oakland, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

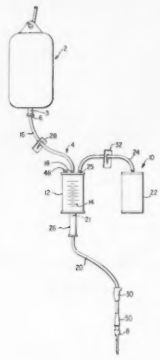
Filed Aug. 15, 1973, Ser. No. 388,441
Int. Cl. A61m *05/14, 05/16*
U.S. Cl. 128—214 R **12 Claims**

1. Apparatus for aseptically dispensing liquid, comprising

a. measuring chamber means for accurately measuring the amount of liquid to be dispensed, said measuring chamber means being filled with a fluid immiscible in the liquid to be dispensed, and

b. flexible chamber means communicating with said measuring chamber means having a variable volume for receiving the immiscible fluid displaced from the measuring chamber means as the liquid enters the measuring chamber means and for returning the immiscible fluid to the

measuring chamber means as liquid is discharged from said measuring chamber means, whereby the apparatus



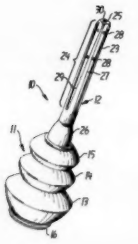
requires no contaminating gas to be introduced into the apparatus as liquid is dispensed.

3,844,284

DISPOSABLE DOUCHE

Stanley Schoenfeld, Pound Ridge, and Jacob Skolnik, New Rochelle, both of N.Y., assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 386,882
Int. Cl. A61m *1/00*
U.S. Cl. 128—232 **9 Claims**



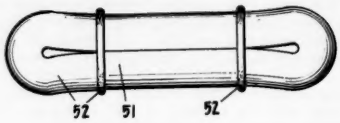
1. A disposable douche comprising a syringe and a discharge nozzle, said syringe being adapted to be collapsible and capable of being retained into itself, said syringe being formed of a body having a base at one end, a neck forming an opening at the other end and a collapsible bellows connecting said base to said neck, said bellows being defined by a plurality of adjacently connected chambers, V-shaped in cross-section, of successively decreasing size, extending from the base to the neck, each of said V-shaped chambers is comprised of a lower and upper frustro-conical portion disposed base to base with the wall of the lower portion defining a straight edge and the wall of the upper portion defining an outwardly extending curved edge, said neck opening being formed on the smallest V-shaped chamber as an externally threaded neck, and said discharge nozzle having means removably securing the same to the neck portion.

3,844,285

DEVICE FOR ADMINISTRATION TO RUMINANTS

Ralph Henry Laby, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Continuation of Ser. No. 67,955, Aug. 28, 1970, abandoned. This application Dec. 14, 1972, Ser. No. 315,013
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **18 Claims**



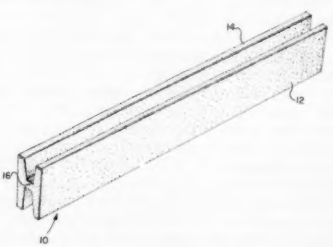
1. A device for insertion into the rumen of a ruminant through the esophagus and adapted to be retained within the rumen for free movement therein over an extended period of time, said device comprising a body containing an effective amount of a therapeutic or nutrient substance of a type normally administered to a ruminant per os, a major proportion of said body consisting of said substance, said body having a compressed configuration and an expanded configuration, the compressed configuration permitting the passage of the device through the esophagus into the rumen and the expanded configuration being one which will substantially retard passage of the device through the esophagus but will still permit substantially free movement of the device within the rumen, means for resiliently urging said body from said compressed configuration to said expanded configuration, restraining means dissolvable in the rumen holding said body in said compressed configuration until it is received within the rumen whereby said device in compressed configuration may be administered per os so as to pass into the rumen and will expand in the rumen so as to hinder regurgitation during the period of treatment, and means for holding said substance in said body and for slowly releasing said substance from said body when said body is in the rumen.

3,844,286

RELEASABLE MEDICAMENT DENTAL CARRIER AND METHOD

Samuel H. Cowen, Southfield, Mich., assignor to Chemed Corporation, Cincinnati, Ohio

Filed Aug. 10, 1973, Ser. No. 387,553
Int. Cl. A61c *3/00*
U.S. Cl. 128—260 **6 Claims**



1. A dental device which comprises a linear flexible foam carrier having an I-beam configuration with channel portions, and a water-soluble medicament disposed on walls of said channel portions for release when in contact with oral fluids whereby the said carrier is bent to an arcuate configuration adaptable to the oral cavity of a user.

3,844,287

ABSORBENT MASS OF ALLOY FIBERS OF REGENERATED CELLULOSE AND POLYACRYLIC ACID SALT OF ALKALI-METALS OR AMMONIUM

Frederick R. Smith, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

Filed June 5, 1972, Ser. No. 259,944
Int. Cl. A61f 13/20
U.S. Cl. 128—285 5 Claims

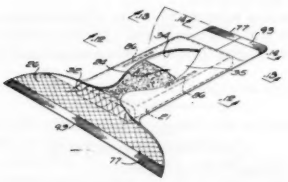
1. An article of manufacture comprising a highly fluid absorbent mass of alloy fibers, said alloy fibers comprising a matrix of regenerated cellulose and polyacrylic acid salt of alkali-metals or ammonium uniformly dispersed therein.

3,844,288

SANITARY PAD AND METHOD OF MANUFACTURE

Gene F. Kiela, Kohler, Wis., assignor to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Mar. 30, 1972, Ser. No. 239,679
Int. Cl. A41b 13/02
U.S. Cl. 128—287 6 Claims



1. A sanitary pad comprising a moisture resistant base panel, a central filler spaced inwardly from the side and end edges of the base panel, a cover sheet of moisture transmitting fabric over the top of the filler, longitudinally spaced reinforcing scrim strips at the ends of the base panel, portions of said strips overlapping the ends of said filler comprising pockets into which said filler ends are received, filler and cover portions intermediate their ends being exposed between said strips and portions of said strips spaced from the ends of said filler comprising continuous sealed zones at the ends of the pad, said base panel having side margins wrapped around the filler, said margins having centrally located notches through which the intermediate portions of the top of the cover and filler are exposed and means adhering central portions of said side margins to pad portions therebeneath, leaving end portions wrapped but unattached whereby the central portions of said margins remain wrapped about the filler when end portions of the margins are unwrapped.

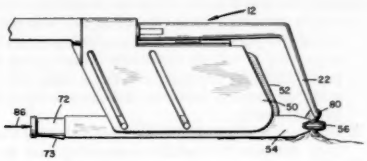
3,844,289

HEMOSTAT AND ATTACHMENT FOR SUTURING ORGANIC TUBULAR STRUCTURES

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.

Filed Apr. 13, 1973, Ser. No. 350,956
Int. Cl. A61b 17/10; B23p 11/00
U.S. Cl. 128—334 R 5 Claims

1. The method for ligating tubular structures and tissue masses with surgical staples while the structures to be ligated are clamped between the clamping jaws of a hemostat, and wherein a staple-carrying cartridge is moveably mounted on one of two pivotally connected arms of the hemostat, wherein the cartridge has a closeable opening adapted to surround the clamping jaws of the hemostat at the end adjacent said clamping jaws, the closeable opening allowing for the free passage of the second of the hemostat arms when the closeable opening is open, the method comprising the steps of: clamping a structure to be ligated between the clamping jaws of the hemostat so as to temporarily close the structure; closing the closeable opening in the cartridge so that the closeable opening completely encircles the clamping jaws of the hemostat; moving the closeable opening along the jaws of the hemostat,



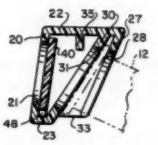
past the respective ends thereof, and about the temporarily closed structure; and ejecting a surgical staple from the cartridge and clinching the same about the structure clamped between the jaws of the hemostat so as to permanently close the structure with a surgical staple.

3,844,290

TRACHEOTOMY DEVICE

Arthur I. Birch, 6178 S. Windemere, Littleton, Colo. 80102, and Darrell E. Brown, 4994 E. Geddes Ct., Littleton, Colo. 80122

Filed July 20, 1972, Ser. No. 273,361
Int. Cl. A61m 25/00
U.S. Cl. 128—351 10 Claims



1. A tracheotomy tube valve assembly for use with a tracheotomy tube inserted in the throat of an individual, the assembly comprising

a. an enclosed, hollow housing means having an inlet means and an outlet means, the housing means includes means to mount said housing means to the exterior end of said tracheotomy tube whereby the outlet means is connected to said tube for passage of air,

b. closure means having a flat, rigid, closure member positioned unattached within said housing means, said closure member being arranged to move about one edge from an open position where the closure member is completely spaced from the inlet means to a closed position where said closure member lies against said inlet means and prevents reverse air flow out of said inlet means during exhalation by said individual, and

c. means for passing air around said closure member so that air will freely pass during inhalation from the inlet means to the outlet means when the closure member is in the open position.

3,844,291

GRIP DEVICE

George A. Moen, 827 W. 26th, Anchorage, Alaska 99503

Filed Apr. 26, 1973, Ser. No. 354,596
Int. Cl. A61b 17/30
U.S. Cl. 128—354 1 Claim

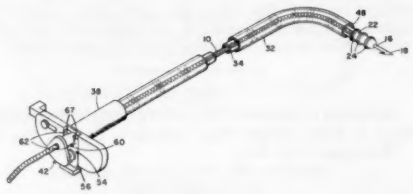
1. A grip device for gripping articles such as needles or the like, comprising

a. a tubular body member (1) having forward and rear ends;
b. a push rod (7) arranged in concentrically spaced relation within said body member for axial displacement between extended and retracted positions relative thereto, the rear end of said push rod projecting rearwardly beyond the rear end of said body member when said push rod is in the retracted position;
c. article gripping means (9) connected with the forward end of said push rod, said article gripping means including a plurality of radially outwardly biased spring jaws that are in a radially expanded condition when said push rod is in the extended condition, thereby to receive an article to be gripped;
d. cam means (8) connected with the forward end of said body member for radially contracting said spring jaws into gripping engagement with the article when the push rod is in the retracted position;

e. a cap (5) containing a threaded bore (6) and a counterbore (6*a*) that defines a transverse wall (6*b*), the rear end of said push rod being threadably connected with said threaded bore, said push rod having such a length and said cap being so dimensioned that when said push rod is in the retracted position, the rear end of said body member extends into said counterbore and terminates in spaced relation a predetermined distance from said transverse wall; and
f. spring means biasing said push rod toward the retracted position relative to said body member, said spring means including a coil spring (4) arranged concentrically about said push rod, the rear end of said spring being seated against said transverse wall and the forward end of said spring being seated against a spring seat defined on said body member, whereby said predetermined distance between said counterbore transverse wall and the rear end of said body member controls the extent of axial displacement of said push rod in the extended direction.

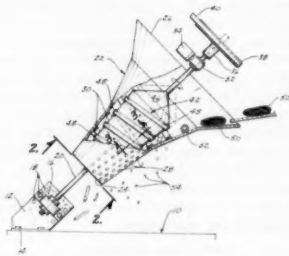
3,844,292
INTRAVASCULAR LEAD ASSEMBLY
Lee Robin Bolduc, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed June 9, 1972, Ser. No. 261,156
Int. Cl. A61n 1/04
U.S. Cl. 128—418 **17 Claims**

1. A body-implantable, intravascular lead adapted to be connected at its proximal end to a source of electrical energy and permanently secured at its distal end through the endothelial tissue of a living animal body for electrical stimulation thereof comprising:
electrically conductive lead means for insertion in and guidance through a body vessel to a desired location and position inside an organ of a living animal body the lead means having a cross-section which will fit within a body vessel;
electrode means affixed to the distal end of said lead means and adapted to supply electrical impulses to tissue at a desired location inside the living animal body, said electrode means including a tissue piercing portion and further including separate tissue engaging means for allowing said electrode means to be firmly lodged in and per-



manently secured through the endothelial tissue at the desired location; and
material means substantially inert to body fluids and tissue encasing said lead means and a portion of said electrode means for sealing them from living animal body fluids and tissue.

3,844,293
CORN SHELLER DEVICE
Donald M. Young, Winterset, Iowa
Filed Mar. 22, 1973, Ser. No. 344,165
Int. Cl. A01f 11/06
U.S. Cl. 130—6 **8 Claims**



1. A corn shelling device comprising,
a truncated cone-shaped housing having open upper and lower ends and an inside wall surface,
said housing being perforated for at least a portion of its length,
a cone-shaped drum means rotatably mounted in said housing and having a peripheral wall surface spaced from the inside wall surface of said housing,
power means for rotating said drum means with respect to said housing,
a first resilient spiral thread means secured to said inside wall surface of said housing and extending therearound, said first thread means protruding towards said drum means,
a second resilient spiral thread means secured to the wall surface of said drum and extending therearound, said second thread means protruding towards said inside wall surface of said housing.

3,844,294

TOBACCO SUBSTITUTE SMOKING MIXTURE

Colin James Webster, West Kilbride, Scotland, assignor to Imperial Chemical Industries, Limited, London, England

Filed Mar. 18, 1971, Ser. No. 125,806

Claims priority, application Great Britain, Mar. 23, 1970, 13861/70

Int. Cl. A24b *15/00*

U.S. Cl. 131—2 8 Claims

1. A smoking mixture for cigars, cigarettes and pipes as a tobacco replacement, said mixture comprising as the smoke-producing fuel thermally degraded carbohydrate prepared by subjecting carbohydrate to a catalyzed degradation process at a temperature of at least 100°C. until the weight of the degraded material is less than 90 percent of the dry weight of the original carbohydrate, 0.5 to 25 percent by weight protein which is essentially pure and free of residual fat, said protein being capable of supporting combustion and being selected from the group consisting of albumin, casein, gelatin peptone, haemoglobin, wool, maize, wheat, soyabean and groundnut proteins, and functioning to reduce off-odors or off-flavors of the smoke from said fuel and up to 4 percent by weight of carotenoid to mask any protein off-notes of the smoke from said mixture.

3,844,295

METHOD AND APPARATUS FOR FORMING A TOBACCO STREAM

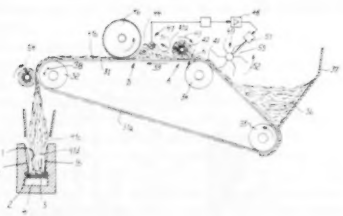
Harry David, Hamburg, Germany, assignor to Hauni-Werke, Korber & Co. KG, Hamburg, Germany

Filed June 29, 1972, Ser. No. 267,709

Claims priority, application Great Britain, July 6, 1971, 31639/71

Int. Cl. A24c *05/39*

U.S. Cl. 131—21 A 13 Claims



1. In an apparatus for forming a continuous stream of fibrous material, particularly a stream of comminuted tobacco particles, a combination comprising a source of supply of fibrous material; conveyor means arranged to receive from said source fibrous material in the form of a continuous layer having a width exceeding its height and to transport the layer lengthwise into a predetermined path extending along successive first and second stations; removing means provided at said first station and including a device for propelling successive increments of the moving layer from said first to said second station whereby the fibrous material of such increments moves along a second path with attendant separation of fibrous material to form at said second station a relatively small floating second supply of separated material, said conveyor means being arranged to withdraw from said floating supply a continuous sliver for movement with said conveyor means along said first path; and means for monitoring the quantity of fibrous material in said floating supply and means for regulating the quantity of fibrous material in unit lengths of said layer in response to signals from said monitoring means.

3,844,296

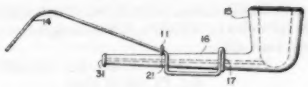
PIPE HOLDER DEVICE

Paul H. Armstrong, Orange, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 20, 1974, Ser. No. 452,923

Int. Cl. A24f *3/00*

U.S. Cl. 131—186 2 Claims



1. A wire frame device for fastening a smoking pipe in a user's mouth, said frame being shaped so as to be attachable to the stem of a smoking pipe and incorporating two lengths of wire that are each shaped to fit about an ear of the user.

3,844,297

COIN SELECTOR AND SORTER

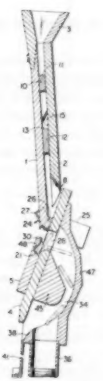
Argyle Glenn Lautzenhiser, Magnolia, Mass., assignor to Arthur D. Little, Inc., Chambridge, Mass.

Filed Feb. 20, 1973, Ser. No. 333,547

Claims priority, application Great Britain, Feb. 23, 1972, 8387/72

Int. Cl. G07f *3/04*

U.S. Cl. 133—1 A 8 Claims



1. Apparatus for facially stacking coins comprising a coin tube of predetermined capacity, and a chute for receiving coins of predetermined diameter which topple into the chute in an initial direction and for causing the received coins to facially slide along and exit from the lower portion of the chute edge first in a final direction across the top of the coin tube,

the chute comprising a coin passage having an entrance at the top and an exit at the bottom, the coin passage being between a front wall, a generally arcuate rear wall, and side walls,

the rear wall having a lower portion shaped to guide the coins from the initial direction to the final direction as they approach the top of the coin tube,

the front wall being defined by the surfaces of a block which faces the rear wall, the end portion of the lower surface of the block being substantially parallel to the downward sloping trajectory of coins sliding edge first from the lower portion of the coin tube;

the coin tube having an open mouth at the top for receiving coins from the chute, the mouth having a lip opposite the lower end of the chute the inner surface of which is ex-

posed when the coin tube is filled to less than its capacity and is obscured by the topmost coin in the tube when the tube is filled to capacity; and

the end portion of the lower surface of the block being spaced above the mouth of the coin tube sufficiently to deflect coins striking the inner surface of the lip into the mouth of the tube.

3,844,298

ANGLED EDGE STACKING COIN CHUTE

Earl O. Schweitzer, Wickliffe, Ohio, assignor to Ardac, Inc., Chesterland, Ohio

Filed Feb. 26, 1973, Ser. No. 336,083
Int. Cl. G07d *1/00*
U.S. Cl. 133—5 **10 Claims**

1. Apparatus to receive, store and dispense coins, comprising:

a chute having at least two continuously intersecting arms, each arm being capable of retaining coins;

means connected to one end of the chute for depositing the coins into the various arms such that no two consecutively deposited coins are received by the same arm; and means connected to the other end of the chute for dispensing a preselected number of the coins from the chute.

3,844,299

CONTROL CIRCUIT FOR DISHWASHER

Stuart E. Athey, Troy; Alan Lee Vore, Franklin, and Donald E. Swihart, St. Paris, all of Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed Apr. 5, 1973, Ser. No. 348,192
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 D **2 Claims**

1. In a control system for any one of a plurality of different types of dishwashing machines which have common features of

a washing chamber with a tank at its bottom for containing a quantity of washing solution,

a heater for heating the solution in said tank,

a temperature sensor arranged to respond to the temperature of solution in said tank,

a spray head for spraying the solution over soiled articles supported in said washing chamber,

a pump connected to circulate solution from said tank through said spray head,

an electric motor driving said pump,

means responsive to motor overload for interrupting the flow of current to the motor, and

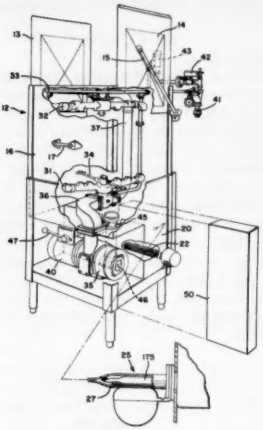
means for spraying rinsing solution over the articles after they have been sprayed with the washing solution,

the improvement comprising

a control circuit board common to all of said different types of machines and having circuit connections to said temperature sensor, said heater, said motor, and said motor overload responsive means,

said control board also having terminal connections from said circuit connections corresponding to the different functions to be sensed and/or controlled, and

function control boards removably connected to said terminal connections and containing control components responsive to said temperature sensor and said motor over-



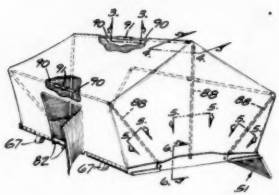
load responsive means and operative to prevent prolonged overload of said motor and to maintain the washing solution within a predetermined temperature range.

3,844,300

TENT AND ENCLOSURE THEREFOR

Richard R. Sanders, 20248 Stagg St., Conoga Park, Calif. 91306

Filed Oct. 19, 1972, Ser. No. 294,148
Int. Cl. A45f *01/00*
U.S. Cl. 135—4 A **3 Claims**



1. A tent apparatus comprising

a foldable platform adapted for folding and unfolding to form a substantially rigid structure in the unfolded position,

a canvas tent formed into the shape of a bag and having the periphery thereof secured to the unfolded portion,

first means fixed to the wall portions of said tent to provide stiffness thereto,

second means fixed to the overhead portion of said tent to provide stiffness thereto,

third means to mount said platform onto a vehicle so that said platform is capable of being folded and unfolded while on the vehicle,

fourth means to allow access into the interior of said tent when said tent is mounted on said vehicle and being adapted to be stowed within said platform in a folded position,

said foldable platform comprising a center portion, two outside portions and hinge means for hinging each out-

side portion on opposite sides of said center portion and adapted to fold over said center portion,

said center portion having a panel sheet with two substantially parallel latches and oppositely disposed flanges normal to said edges and extending in the same direction,

said exterior portions each having panel sheets with one straight edge and oppositely disposed flanges substantially normal to said respective edge and extending in the same direction,

said hinge means being disposed to hinge each of said exterior portions to said center portion so that the straight edges and each adjacent one of the respective parallel edges are in abutting relationship,

the longitudinal distance between said flanges on each of said exterior portion being greater than the longitudinal distance between such flanges on said center portion so that when said exterior portions are in their position over said center portion, said flanges thereon are covered by said flanges on said exterior portions,

said exterior portions being substantially rectangular wherein the width of each of them is less than half the width of said center portion,

a cover panel hinged to one of said exterior panels along a line spaced from the outer edge thereof having a width to extend over said other exterior portion and having oppositely disposed flanges that extend over said center and exterior portions when said platform is folded,

each of said hinge means including a hinge bar disposed inwardly spaced from said flange on both said exterior portions and extending over said center portion,

said hinge bars and said flanges on center portion extending substantially equally upward from the respective panel sheets in a region substantially near said edges,

a pin engaging each of said bars and flanges on said center portion with the said pin disposed substantially midway between the edge of said bar and said flange to said respective panel sheet,

a first block disposed on each of said bars substantially near and over each of said respective pins,

a second block disposed on each of said flanges on said center portion and disposed to bear against each respective one of said first blocks when said platform is unfolded,

a stiffener member placed on each of said edges on said center portion and said exterior portions, and disposed so that the respective stiffener members bear against each other when said platform is unfolded,

first and second members extending upward from the respective outside edges of said exterior portion,

third, fourth and fifth members extending upward from the respective panel sheets on a line with each other and spaced inward from said hinge bars on both sides of said platform to form an open vessel when said platform is unfolded, and

foam padding disposed in said open vessel and adapted to be folded with said portions.

3,844,301

COLLAPSIBLE UMBRELLA

Vernon Harrell, 13875 N.W. 22 Ave., Opalocka, Fla. 33054

Filed Oct. 9, 1973, Ser. No. 404,216

Int. Cl. A45b *19/00*

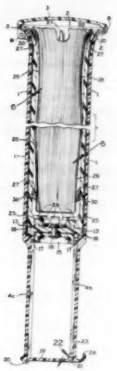
U.S. Cl. 135—20 R **5 Claims**

1. A collapsible umbrella having all elements made from plastic material comprising a main frame molded from relatively rigid plastic material having a pair of longitudinal side bars of predetermined length and in spaced parallel relation with an inner and outer spherical surface with relation to a central longitudinal axis having the opposite upper end of said bars integral with the opposite sides of the lower edge of a circular ring member which is coaxial with a central axis between said bars,

the outer side of said ring member having a predetermined outward divergent surface and uniform cross section and uniform predetermined width and the inner side having an outward curved surface including a plurality of T shaped grooves in equi-spaced relation around the inner side portion thereof with the central opening of each said T of each of said grooves radial to the said axis,

a hand grip member formed by integral longitudinal parallel extensions of the lower end of said bars and having a cylindrical inner and outer surfaces of predetermined radaii with respect to said axis for holding the said umbrella,

a circular projection of predetermined width around the inner side integral with the junction of each said bars and each said grip member forming opposite upper and lower planar shoulders normal said axis,



a plastic bridge member secured at each end thereof to the end of each said grip member for retaining said bars and said grip members in parallel relation,

a circular canopy control member positioned coaxial with said axis between and normal thereto with opposite projections slidably engaged in opposite sides of facing grooves along the inner side of each of said bars for movement from a low position on said upper side of said projection to a predetermined upper high position between said bars,

a manual operating handle means pivotally secured to the under side of said control member for predetermined angular oscillation about said axis including a manual handle means extending outward from the opening between said bars for moving said control member from said low to said high position including a portion thereof adapted to engage the under side of said projection when said handle means is rotated a predetermined angle for locking said control member in its low position,

a plurality of spherical upstanding equi-spaced pivots integral with the upper side of said control member in circular formation a predetermined distance from said axis for engaging the ends of a corresponding number of canopy ribs,

a circular canopy sheet of flexible material of predetermined diameter and uniform thickness and having a plurality of outer clevises equi-spaced around the outer margin thereof and a like plurality of inner clevises equi-spaced a predetermined short distance from the center of said circular sheet with each pair of said inner and outer clevises positioned in radial relation to said center,

a number of canopy ribs equal to the number of said canopy pivots with each of said ribs formed from plastic material of predetermined flexibility and having an integral socket at one end thereof in forced engagement on each said spherical pivot and each of said ribs having a pair of

canopy hooks projecting from one side thereof a predetermined distance from the outer end of each of said ribs, each of said ribs secured to said canopy sheet by said hooks on the under side of said canopy ribs in equispaced radial relation to the center of said canopy sheet forming an assembly thereof whereby when said umbrella is in closed idle position each of said ribs is slidably engaged in each of said corresponding T shaped grooves and said control member is locked against the upper side of said circular projection by said handle means with the said canopy sheet in folded random position between each rib and said bars and whereby said umbrella is operated to its open position by the angular axial rotation of said handle means for unlocking said control member and the upward movement thereof will force said ribs through said T shaped grooves until said control member is in said upper position restrained by the opened said canopy assembly which is generally spherical equal multi-wedge sections between said ribs.

3,844,302

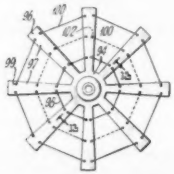
COLLAPSIBLE UMBRELLA

Harry Klein, Ft. Lee, N.J., assignor to Telesco Brophey Limited, Montreal, Canada

Continuation-in-part of Ser. No. 71,732, Sept. 14, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 234,719

Int. Cl. A45b *19/06*

U.S. Cl. 135—26 **1 Claim**



1. In a collapsible umbrella of the type having an elongatable shaft, a cover, elongatable ribs under the cover with the cover connected thereto at points at the periphery of the crown region and being free from the ribs for a distance inward of those points, the umbrella having a notch to which the shaft, ribs, and cover are connected, the improvement that comprises the inclusion of a spreader which comprises an integral plastic star including hub and fingers, portions of said spreader that are spaced out from the hub lying over the ribs and under the cover, the notch comprising an integral molded plastic member that includes a horizontal base disk annularly channeled at its circumferential edge, with a plurality of regularly spaced vertical recesses intersecting the annular channel, an upstanding tubular shank whose lower portion at least is externally threaded, with a pair of diametrically opposite vertical grooves in the outside face of said shank.

3,844,303

LIME CONTROL METHOD FOR HIGHLY ALKALINE FLOTATION PULPS

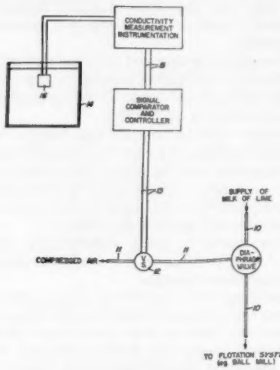
Anthony G. Moon, and Roger L. Vaughn, both of Silver City, N. Mex., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,540

Int. Cl. G05d *11/02*

U.S. Cl. 137—5 **3 Claims**

1. A method of controlling lime additions to an alkaline flotation circuit operating on a sulfide mineral ore in order to substantially maintain a predetermined degree of alkalinity in the flotation pulp of such circuit at or above a pH of about 9. comprising continuously sensing the electrical conductivity of the flotation pulp in said circuit; continuously comparing the values of electrical conductivity so obtained with a preset value of electrical conductivity corresponding to said predetermined degree of alkalinity; and controlling lime additions to said flotation circuit in accordance with deviations of the sensed values of electrical conductivity from said preset value.


CONDUCTIVITY MEASUREMENT INSTRUMENTATION
SIGNAL COMPARATOR AND CONTROLLER
SUPPLY OF MILK OF LIME
COMPRESSED AIR
TO FLOTATION SYSTEM (eg BALL MILL)

3,844,304

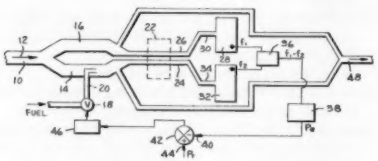
METHOD AND APPARATUS FOR CONTROLLING THE RATIO OF GASES IN A MIXTURE

Willis Anson Boothe, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,500

Int. Cl. F02m *7/12*

U.S. Cl. 137—7 **14 Claims**



1. A method for controlling the percentages by weight of at least a first and a second gas in a mixture, comprising the steps of:

a. separating said first gas into preset first and second parts;

b. mixing said first part of said first gas with said second gas;

c. comparing said second part of said first gas with the mixture of said first part of said first gas and said second gas as a function of their respective molecular weights and independently of their temperature;

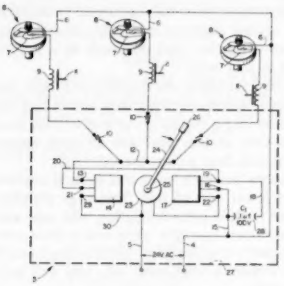
d. varying the percentage of said second gas within the mixture of said second gas and said first part of said first gas to its desired value by weight in response to the comparison of said second part of said first gas with the mixture of said first part of said first gas and said second gas; and

e. mixing said second part of said first gas with the varied percentage by weight of said first part of said first gas and said second gas to obtain the controlled mixture of said first and second gases.

3,844,305
MONITOR UNIT

John Paradis McCormick, 521 Hilmar St., Santa Clara, Calif. 95050

Filed June 20, 1973, Ser. No. 371,889
Int. Cl. A01g 25/00; H01h 41/00
U.S. Cl. 137—78 8 Claims

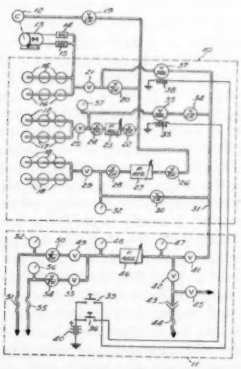


1. A monitoring unit comprising an electric circuit, a normally open electric sensor interposed in said circuit and responsive to an abnormal condition to assume a circuit closing position, a reed switch interposed in said circuit in series with said sensor, a permanent magnet, electrically driven means interposed in said circuit for periodically moving said permanent magnet into proximity with the reed switch to effect the closing of the reed switch, electrically actuated means interposed in the circuit in series with the sensor and reed switch for effecting the correction of the abnormal condition causing the movement of the sensor to a circuit closing position, whereby said last mentioned means will be energized when the reed switch is closed by the permanent magnet, and means interposed in said circuit for interrupting movement of the permanent magnet from a position maintaining the reed switch in a closed position, so long as the sensor remains in a circuit closing position.

3,844,306
GAS SUPPLY SYSTEM

Robert E. Hill, 325 Hickory Ave., Merritt Island, Fla. 32952

Filed Mar. 7, 1973, Ser. No. 338,846
Int. Cl. F17d 1/02
U.S. Cl. 137—256 10 Claims

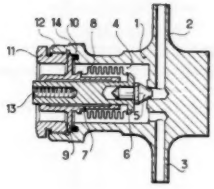


1. In a gas supply system comprising:
a plurality of banks of storage containers;
and regulator means operatively associated individually with banks of said storage containers for limiting the respective gas pressures therein to different predetermined values;
the improvement which comprises:
means for connecting a pressurized gas source to said plurality of banks of storage containers to first add pressurized gas to the bank which is at the lowest pressure until its pressure becomes substantially equal to that of the next higher pressure bank, and thereafter in succession to each successively higher pressure bank simultaneously with said lowest pressure bank until each bank being filled reaches the gas pressure limit determined by its individual regulator means;
said gas supply system also comprising:
means for withdrawing pressurized gas first from the bank of storage containers which is at the lowest pressure;
and means operable thereafter for withdrawing pressurized gas from the higher pressure banks of storage containers in succession.

3,844,307
GATE VALVE FOR THE TRANSFER OF HIGH PURITY GAS

Jean-Pierre Soury, Igny; Andre Lambert, Gif-sur-Yvette, and Rene Barandon, Morangis, all of France, assignors to Societe Generale De Constructions Electriques Et Mecaniques (Alsthom), Paris, France

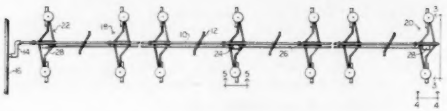
Filed May 25, 1972, Ser. No. 256,649
Claims priority, application France, May 27, 1971, 71.19399
Int. Cl. F16k 41/10, 31/145
U.S. Cl. 137—271 8 Claims



1. A gate valve for the transfer of a high purity gas, comprising a valve body having a gas passage communicating with an inner chamber, a closure member disposed in said inner chamber for selective engagement in said gas passage to open and close said passage, a piston having an elongated body and an outwardly extending annular flange at one end thereof which is secured to said closure member, a guide member mounted in said valve body having said piston glidingly disposed therein and including a projecting portion guiding said one end of said piston, a sealing ring disposed between said guide member and said valve body, clamping means for clamping said guide member against said sealing ring, means for moving said piston, and a fluid-tight sealing bellows surrounding said projecting portion of said guide member and being connected between said one end of said annular flange of said piston and said guide member so that said closure member in said inner chamber is effectively isolated by said sealing ring and said bellows from the contacting surfaces of said piston and said guide member and from said clamping means, wherein said means for moving said piston includes a hollow adjusting member, a diaphragm disposed in said adjusting member to define a chamber on at least one side thereof, and a control rod secured to said diaphragm and coupled to the end of said piston opposite said closure member, said adjusting member being secured to said valve body and having a pressure inlet passage for introducing a gas under pressure into said cham-

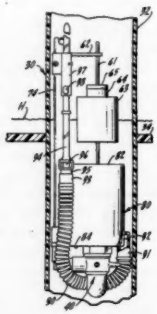
ber thereof to effect movement of said control rod and said piston, thereby regulating the position of said closure member.

3,844,308
DIRIGIBLE IRRIGATION SYSTEM
Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic, Inc., Brownfield, Tex.
Continuation of Ser. No. 846,211, July 30, 1969, abandoned. This application June 12, 1973, Ser. No. 369,226
Int. Cl. A01g *25/02*; **B05b** *3/12*
U.S. Cl. 137—344 **9 Claims**



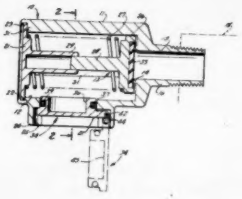
1. In an irrigation system having
a. an elongated pipe adapted to carry sprinklers thereon,
b. means attached to the pipe for supplying water under pressure to the pipe,
c. a plurality of vehicles including a vehicle at each end of the pipe movingly supporting the pipe,
d. drive means on the system for driving each vehicle transversely to the elongated pipe, and
e. alignment means on the system for maintaining all the vehicles in alignment between the end vehicles;
f. the improvement in combination with the above comprising:
g. sighting means mounted on the pipe for guiding the system with relationship to a distant object.

3,844,309
BRINE VALVE ASSEMBLY
Edward Joseph Tischler, St. Paul, Minn., assignor to Ecodyne Corporation, Chicago, Ill.
Filed Nov. 16, 1973, Ser. No. 416,708
Int. Cl. F16k *31/22*
U.S. Cl. 137—399 **5 Claims**



1. In a brine system for regenerating ion exchange material used for water conditioning including a brine tank, having a brine well positioned therein so as to define a brine valve compartment within said well and a brine storage compartment outside said well and means associated with the lower end of said well for permitting fluid communication between said brine valve compartment and said brine storage compartment; an improved brine valve assembly for controlling the influx of refill water to said tank and the efflux of brine from said tank, comprising:
a. a valve body having an internal chamber and an upwardly opening annular port;
b. annular seat means concentric with said annular port;
c. a vertically elongated float guide means extending above said seat means in said well;
d. a float means movable along said guide in response to changes in the level of liquid in said well;
e. a valve closure member means carried by said float means to close against said seat means for closing said annular port when the brine level descends to a predetermined low level in said well;
f. a float cage member concentric with said float guide means and positioned immediately above said valve body, said cage having a closed lower end in fluid communication with said annular port and an open upper end for receipt of said float means therethrough;
g. a tube means having a lower end in fluid communication with said lower end of said float cage member and an upper end in fluid communication with said well; and
h. a conduit means having a lower end in fluid communication with said valve body for withdrawing brine from said well and directing refill water into said well through said annular port.

3,844,310
PRESSURE RELIEF VALVE UNIT
Frederick J. Brindisi, 1385 Fairport Rd., Fairport, N.Y. 14450
Division of Ser. No. 219,274, Jan. 20, 1972, abandoned. This application June 12, 1973, Ser. No. 369,408
Int. Cl. F16k *37/00*, *17/08*
U.S. Cl. 137—557 **5 Claims**



1. A pressure relief valve unit for automatically relieving a container of excessive pressure of gas developing therein, comprising a housing having an internal chamber, a pipe nipple extending from one end of the housing for coupling the unit to the container, the nipple defining an inlet passage to the chamber for conducting pressurized gas from the container into the chamber, a valve seat defined about the inner end of the passage at its juncture with the chamber, a valve movable axially in the chamber relative to the seat, a spring biasing the valve to a closed condition upon the seat, the valve being movable from its seat upon development of a predetermined pressure of gas in the pipe nipple, and an escape tube depending from the underside of the housing defining a relief passage communicating the chamber with atmosphere; wherein the chamber is axially aligned with the inlet passage and is of a greater diameter, a group of circumferentially spaced ribs extend lengthwise of the wall of the chamber and depend radially for guiding the valve as it is moved relative to the seat, the ribs defining between each other radially recessed areas having direct communication with the relief passage of the escape tube, and the recessed areas having direct communication with the inlet passage upon unseating of the valve, wherein the housing has a rear closure wall provided with a sleeve extending axially forwardly into the chamber, and the valve has a circular head that is engageable with the seat and is provided with a rearwardly extending stem slidably received

in the sleeve; and wherein a plug closure is frictionally engageable in the tube for closing the relief passage, the plug closure when in closed position being adapted under pressure of fluid entering the chamber to drop out of the relief passage, the plug closure having when in closed condition a position entirely within the tube, and lost motion hinge means connected with the plug closure within the tube adjacent a bottom open end of the tube which allows movement of the plug closure from a position closing the passage to a position depending externally of the bottom end of the tube.

3,844,311

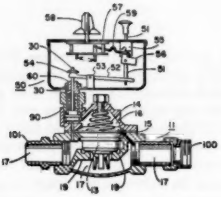
VALVE CONTROL APPARATUS

Horace C. McSwain, 703 Westwood, Richardson, Tex. 75080

Filed Nov. 10, 1972, Ser. No. 305,295

Int. Cl. F16k *21/06*

U.S. Cl. 137—624.11 **4 Claims**



1. Apparatus for controlling fluid flow through a valve of the type including a primary channel having an inlet and an outlet, a restricted passageway interposed between the inlet and the outlet of the primary channel, blocking means seatable in the passageway from the outlet side thereof, an expandable fluid chamber coupled to the blocking means and having an inlet and an outlet, the inlet of the expandable chamber being in fluid communication with the inlet of the primary channel to expand the chamber to seat the blocking means in the passageway when the outlet of the expandable chamber is blocked, and to permit compression of the expandable chamber by the fluid in the inlet of the primary channel when the outlet of the fluid chamber is unblocked to unseat the blocking means to permit fluid flow through the passageway, which comprises:

a control chamber having an inlet in fluid communication with the outlet of the expandable chamber and an outlet in fluid communication with the outlet of the primary channel;

an elongated piston slidably disposed axially in said control chamber and moveable between a first position permitting fluid flow through said control chamber and a second position obstructing fluid flow through said control chamber;

means resiliently urging said piston axially into said second position;

a fixed fulcrum;

a lever pivotally mounted on said fulcrum and pivotally connected at one end to said piston;

an elongated plunger pivotally connected at one end to the other end of said lever;

means guiding said plunger for slidable movement axially in a path substantially parallel to the path of said piston, whereby said piston and said plunger are urged in opposite directions through said lever by said resilient means;

a latching member pivotally connected at one end to said plunger;

a selectively actuable, automatic timing device having an element moveable from a predetermined position when said timing device is actuated and returnable to said position when said timing device ceases actuation;

means resiliently coupling said latching member to the element of said timing device to control the pivotal position of said latching member in accordance with the position of said element; and

first and second abutment means formed on said plunger guiding means in offset spaced relationship along the path of said plunger away from said lever,

said latching means being in a predetermined pivotal position aligned and resiliently urged into abutting engagement with said second abutment means, to permit said piston to be urged into its second position by said resilient means, when said element of said timing device is in its predetermined position and being moveable out of said predetermined pivotal position and aligned and resiliently urged into abutting engagement with said first abutment means, to hold said piston in its first position through said plunger and said lever against the force of said resilient means, when said element of said timing device is moved from its predetermined position.

3,844,312

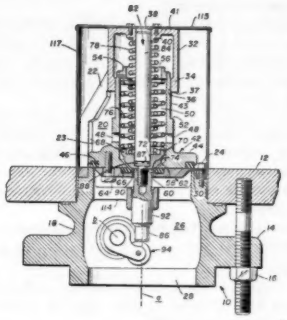
RAPID EQUALIZING TIGHT SHUT-OFF INTERNAL CONTROL VALVE

William D. Sumner, McKinney, and Gary L. Koch, Allen, both of Tex., assignors to Fisher Controls Company, Inc., Marshalltown, Iowa

Continuation of Ser. No. 200,909, Nov. 22, 1971, abandoned. This application July 30, 1973, Ser. No. 383,740

Int. Cl. F16k *17/30*

U.S. Cl. 137—630 **9 Claims**



1. An internal control valve, comprising

generally annular main valve means disposed about a central axis and having upstream and downstream sides and excess-flow sensing means, said main valve means being arranged to be actuated from its open to its closed positions upon the occurrence of an excess-flow condition by said excess-flow sensing means and differential pressure across same,

pilot valve seat means carried by said main valve means,

a slidably disposed valve stem extending axially and passing through said pilot valve seat means and having a portion defining with said pilot valve seat means, a substantially unrestricted rapid pressure-equalizing bleed passage communicating with both sides of said main valve means, pilot valve plug means mechanically coupled to and actuated by said valve stem and including a first part for opening said bleed passage from said upstream side and a second axially elongated part including means radially dimensioned to fit within and substantially close said bleed passage when said elongated portion is actuated from said downstream side of said main valve member into a position where it will register within said bleed passage, and

means for actuating said valve stem to predetermined positions where said first part and said second part of said

pilot valve plug means open from said upstream side and close from said downstream side, respectively, said bleed passage.

3,844,313

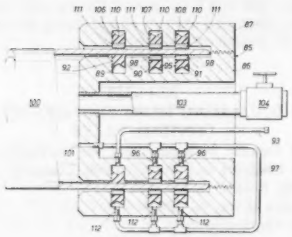
APPARATUS AND METHOD FOR MAKING A TEST CONNECTION TO A TUBULAR MEMBER

James F. Arnold, Houston, Tex., assignor to Hydrotech International, Inc., Houston, Tex.

Division of Ser. No. 185,084, Sept. 28, 1971. This application Apr. 26, 1973, Ser. No. 354,800

Int. Cl. F16l *17/02*

U.S. Cl. 138—90 **24 Claims**



1. In an apparatus for closing the end of a tubular member, the combination comprising:

a plug member arranged for insertion in the end of said tubular member in telescopic relationship therewith, said plug member having at least two axially spaced apart annular recesses thereabout, with each of said recesses facing radially outward;

an annular resilient seal supported in one of said recesses and forming an annular closed chamber radially inwardly thereof, with said seal being arranged for sealing engagement between said plug member and the internal surface of said tubular member upon radially outward deformation thereof;

means for applying fluid pressure to said annular chamber to deform said seal radially outwardly to said sealing position;

another annular resilient ring supported in another of said recesses and forming another annular closed chamber radially inwardly thereof;

means supported by said other resilient ring for locking said plug member in said telescopic position upon actuation thereof;

and means for applying fluid pressure to said other annular chamber to deform said other ring radially outwardly and urge said locking means to said locking position.

3,844,314

TELESCOPIC SHOCK ABSORBER SHIELD TUBE

Stanley Vincent Chadwick, Wigan, England, assignor to General Motors Corporation, Detroit, Mich.

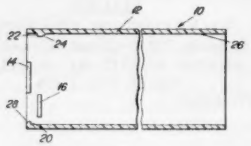
Filed Feb. 7, 1972, Ser. No. 224,049

Claims priority, application Great Britain, Feb. 25, 1971, 5454/71

Int. Cl. F16l *25/00*

U.S. Cl. 138—109 **4 Claims**

1. A dust shield for a telescopic shock absorber comprising an elongated support, said support having an annular flange member extending radially outwardly from one end portion thereof, said flange member having substantially flat upper and lower surfaces adjacent to the periphery thereof, cover means entirely disposed around said elongated support and coextensive therewith, said cover means comprising a tube of an elastic plastic material having a cylindrical interior wall portion with an internal diameter at least equal to the external diameter of said annular flange member, first gripping means integral with said cylindrical interior wall portion of said tube extending radially inwardly thereof, second gripping means integral with said cylindrical interior wall portion of said tube and extending radially inwardly thereof, said second gripping means being axially positioned with respect to said first gripping means by a distance equal to the thickness of said annular flanged member to provide a space therebetween to receive the periphery of said flange member, said first and second



gripping means having radially extending flat surfaces that face each other for contacting and gripping said flange member when installed therebetween, said first gripping means being formed with an inclined ramp on one side thereof for initial contact with the periphery of said flange member when said flange member is inserted axially into said tube to permit said flange member to radially deflect said tube so that said flange member can be subsequently trapped in said space by said first and second gripping means to thereby secure said tube to said flange member and around said support.

3,844,315

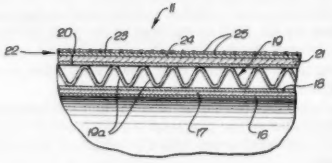
LAMINATED CONDUIT AND SYSTEM

James W. Williams, 3029 Country Club Dr., Costa Mesa, Calif. 92626

Filed Mar. 26, 1973, Ser. No. 344,625

Int. Cl. F16l *9/14, 9/16*

U.S. Cl. 138—140 **4 Claims**



1. A laminated, stiff conduit construction comprising

a. a first and innermost layer consisting of metallic foil,

b. a second layer consisting of fire-proof paper adherent to the first layer at the outer side thereof,

c. a third layer consisting of fire-proof paper adherent to the second layer at the outer side thereof,

d, a fourth layer consisting of fire-proof paper forming multiple corrugations whose crests at the inner side of the fourth layer are adherent to the outer side of the third layer,

e. a fifth layer consisting of fire-proof paper adherent to the crests of the corrugations at the outer side of the fourth layer,

f. a sixth layer consisting of chip board adherent to the fifth layer at the outer side thereof, the thickness of the sixth layer substantially exceeding the thickness of each of the second, third and fifth layers, but being less than the overall thickness of fourth layer,

g. and a pre-formed seventh layer including an outwardly facing and exposed metallic foil sheet operatively connected to said sixth layer at the outer side thereof, said

seventh layer also including a layer of paper at the inner side of the foil sheet, and glass fiber scrim sandwiched between said last mentioned paper layer and said foil sheet,

h. said second through fifth layers consisting essentially of Kraft paper and asbestos, the asbestos content substantially exceeding the Kraft paper content, and

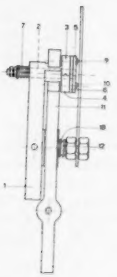
i. said layers being bonded together.

3,844,316

WEFT THREAD HOLDING AND CUTTING DEVICE FOR LOOMS

Jacques Palencher, Troyes, France, assignor to Societe dite Lebocey Industries, Troyes, France

Claims priority, application France, Nov. 26, 1971, 71.42570
Filed Nov. 27, 1972, Ser. No. 309,646
Int. Cl. D03d *49/70*
U.S. Cl. 139—122 R **4 Claims**



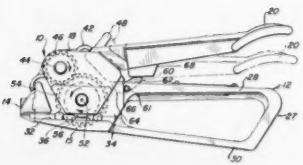
1. Device for holding and cutting a weft thread for a shuttleless loom, comprising two grippers for holding the weft thread and two cutting blades for cutting the weft thread, said grippers being movably engageable with each other, each of said grippers having a gripping surface which remains parallel to the trajectory of the weft thread in the loom, said grippers and said cutting blades being movably controlled by stud means located in recesses in said grippers and said cuttingg blades, one of said grippers having a recess larger than said stud means to allow substantial relative movement between said gripper and said stud means, and a spring means which contacts and constantly pushes said gripper with the large recess in order to position the gripping area at a level above the area of the cutting blades.

3,844,317

STRAP TENSIONING TOOL

Barry R. Angarola, Schaumburg, and David E. Crittenden, Wheeling, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed June 18, 1973, Ser. No. 370,941
Int. Cl. B21f *9/02*; **B25b** *25/00*
U.S. Cl. 140—93.2 **14 Claims**



1. A strap tensioning tool for use with a strap disposed around an article in a loop so that an inner strap portion is overlapped by an outer strap portion to complete said loop, with a seal receiving a section of said overlapped portions and with an end section of said inner overlapped portion folded under said seal held between the article and the facing seal surface, said tool comprising: a frame having an anvil section, said frame having an abutment at one end thereof engageable with said seal, said outer overlapping strap portion protruding beyond said seal; tensioning means carried upon said frame and including a movable handle, a feeding assemby having a strap-engaging member, means mounting the feeding assembly for movement relative to said frame toward and from said anvil section, means biasing the feeding assembly toward said anvil section to compress said protruding strap portion between said strap-engaging member and said anvil section, means for moving said feeding assembly away from said anvil and including a lever pivoted on said frame at a point removed from said feeding assembly and having a first arm extending into the path of said handle, said lever including a second arm engaging said feeding assembly and which upon movement of said handle into engagement with said first arm overcomes said feeding assembly biasing means and moves said feeding assembly relative to said frame to permit said protruding strap portion to be accepted between said anvil section and said strap engaging member, and a drive mechanism connected between said handle and said strap engaging member to transmit a tensioning force in a direction away from said seal and said abutment and toward said strap engaging member when said handle is moved relative to said frame, whereby said protruding strap portion is moved through said seal to increasingly tension said loop and the protruding strap section between said seal and said strap engaging member, with said increased tensioning of said protruding strap section providing an increasing reaction force through said strap engaging member to further bias said feeding assembly toward said anvil section, said biasing of said feeding assembly toward said anvil section thereafter increasing with the increased tensioning of said protruding strap section and the consequent reaction force to become far greater than any force exerted by said means for moving said feeding assembly, rendering said means effectively inoperable as said tension on said strap is increased.

3,844,318

SYRINGE LOADING GUIDE

David C. Raia, 81 Ridge St., Arlington, Mass. 02174, and Brewster H. Staples, 13 Squanto Rd., Woburn, Mass. 01801

Filed Apr. 18, 1973, Ser. No. 352,107
Int. Cl. B65b *3/32*
U.S. Cl. 141—27 **11 Claims**

1. A guide for use with a hypodermic syringe of the type having a barrel; a needle extending from a forward end of the

barrel; and a plunger terminating in a knob extending out of the rearward end of the barrel; said guide comprising;

a relatively rigid body structure having three parts;

a middle part having an opening therein for receiving a syringe;

a forward part having an opening therein communicating with the syringe receiving opening for receiving a medication bottle; means for fixing a predetermined distance between a medication bottle and a syringe when they are received in their respective openings;

a loading control part located rearward of said syringe receiving opening having at least one ribbed member extending rearwardly of said syringe receiving opening and in partial interference with the path of withdrawl movement of the plunger knob of a syringe emplaced in the guide for sequential contact by the plunger knob with the ribs as it is withdrawn; and

means for biasing such a knob against the ribbed member; whereby a dosage bottle may be emplaced and a syringe inserted into the opening and the needle, be reason of the predetermined distance, inserted the correct distance into the bottle; whereupon the plunger may be withdrawn across a predetermined number of ribs of the ribbed member until a desired amount of fluid is drawn into the syringe; thus permitting a correct dosage to be drawn into the syringe by sensing the passage of the knob across the correct number of ribs.

3,844,319

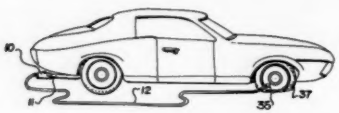
PUMP ATTACHABLE TO AN AUTOMOBILE EXHAUST

Ado Cristante, c/o Maiello 2547 Laconia Ave., Bronx, N.Y. 10469

Filed June 8, 1972, Ser. No. 261,000

Int. Cl. B60c *23/10*; **F16k** *15/20*

U.S. Cl. 141—38 **9 Claims**



1. An automobile exhaust pump conprising a sleeve adapted to fit snugly about the end of an automobile exhaust pipe; said sleeve including a closed end portion, an opening in said sleeve end portion including means to receive a hose fitting, a hose fitting, a hose attached to said hose fitting, an air pressure valve attached to said hose, an exhaust opening in said closed end portion; said opening of a size selected to maintain a pressure in said exhaust system when said automobile is operating low enough for said automobile engine to function and high enough to fill a tire, and a chain, one end of said chain adapted to be looped about said exhaust pipe and hold firm, the other end affixed to said sleeve and connected parts, all adapted to maintain said sleeve on said exhaust pipe.

3,844,320

APPARATUS FOR END PROFILING AND GLUE APPLICATION IN THE END BONDING OF BOARDS

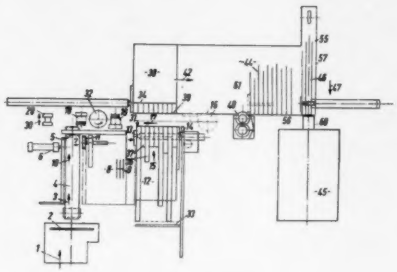
Erwin Dimter, Rudolf-Diesel-Str. 12, 7918 Illertissen, Germany

Filed Feb. 24, 1970, Ser. No. 13,299

Int. Cl. B27m *3/00*; **B27f** *1/00*

U.S. Cl. 144—3 R **6 Claims**

1. Apparatus for fabricating boards from pieces of random length comprising means for assembling a plurality of such pieces of random length side by side with the edges of corresponding ends in alignment, means for profiling said aligned edges, means for restraining said pieces against displacement while said aligned edges are being profiled, means, following the profiling of said aligned edges, for shifting said pieces



longitudinally in order of their lengths to bring the opposite end edges of said pieces into alignment, and means for profiling said opposite edges while in alignment.

3,844,321

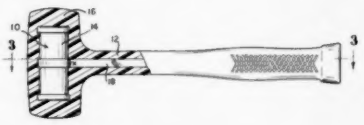
UNITARILY CAST HAMMER

William H. Cook, Indianapolis, Ind., assignor to Custom Electronic Systems, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 155,516, June 22, 1971. This application May 7, 1973, Ser. No. 357,694

Int. Cl. B25d *1/00*

U.S. Cl. 145—29 R **8 Claims**



1. An impact tool, which comprises a skeletal insert member, said skeletal insert member including a tubular head member and a handle member secured to said tubular head member, and an elastomeric encasement, said skeletal insert member being completely encased in said elastomeric encasement, said handle member having mechanical locking means thereon for preventing any twisting of the handle of the impact tool with respect to the head of the impact tool.

3,844,322

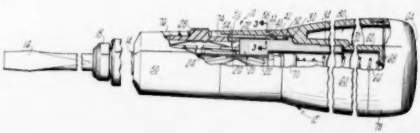
HANDLE FOR ROTARY HAND TOOL

Carl Christian Stoutenberg, Avon, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Sept. 24, 1973, Ser. No. 400,339

Int. Cl. B25g *1/06*; **B25b** *15/04, 13/46*

U.S. Cl. 145—75 **6 Claims**



1. In a handle for a rotary hand tool of the reversible ratchet type, the combination including a ratchet mechanism; an

elongated generally cylindrical shell mounting said ratchet mechanism adjacent one end thereof and having an outwardly projecting retaining lug intermediate the ends thereof; a cylindrical sleeve mounted on said one end of said shell to enclose said mechanism and extending longitudinally along said shell beyond said retaining lug, said sleeve having an elongated axially extending slot and a side aperture adjacent said slot for receiving said lug and locking said sleeve on said shell; and a hand grip mounted by an interference fit on the end of said shell opposite said one end, said hand grip having a tubular extension forming a hoop circumscribing said sleeve and preventing expansion of said sleeve along said slot and removal of said lug from said aperture.

3,844,323

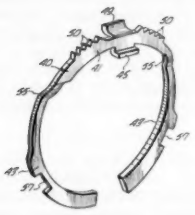
SPLIT LOCK RING

Raymond Burr Anderson, Jr., Pasadena, Calif., assignor to Ceromet, Inc., Industry, Calif.

Division of Ser. No. 202,167, Nov. 26, 1971, Pat. No. 3,762,455. This application Oct. 1, 1973, Ser. No. 402,365

Int. Cl. F16b *39/10*

U.S. Cl. 151—28 **6 Claims**



1. A split ring adapted for use in a lock nut assembly to be secured to a threaded member with a keyway, wherein the assembly includes a nut having an axial bore and an annular shoulder portion surrounding the bore at one end of the nut, the nut further having an axially traverse annular groove circumscribing the base of the nut adjacent the shoulder portion and being axially outward thereof toward the one end, the nut further including alignment means for relatively positioning a second piece,

the split ring comprising a radially inwardly extending key member on the inner edge thereof adapted to engage the keyway groove of the threaded element, a ring body portion and a flexible leg portion extending circumferentially from each end of the body portion, the ring body portion lying in a first plane and the flexible leg portions being offset from the body portion and substantially lying in a second plane substantially parallel to the first plane, the pair of flexible leg portions capable of operatively engaging the annular groove and the ring body portion capable of operatively bearing against the shoulder portion;

co-acting alignment means on the split ring capable of cooperating with the nut alignment means to prevent relative rotation between the nut and the split ring, and

camming means for biasing the split ring against the nut including an outwardly projecting member on the outer edge of the split ring body portion extending into the second plane of the flexible leg portions with at least a portion of the projection member lying in the second plane capable of engaging the annular groove of the nut whereby the respective operative engagement of the projecting member, ring body member and flexible leg portions with the nut in two separate planes can provide an axial force between the nut and split ring to hold them together.

3,844,324

ANTI-SKID TRACTION DEVICE FOR VEHICLE TIRES

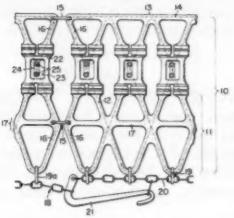
Yoshikazu Kondo, Yokohama; Harumichi Yamazaki, Tokyo, and Akito Akinaga, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 29, 1973, Ser. No. 410,366

Claims priority, application Japan, Mar. 5, 1973, 48-25837; Nov. 7, 1972, 47-111364

Int. Cl. B60c *27/06, 27/10*

U.S. Cl. 152—239 **8 Claims**



1. An anti-skid traction device for a vehicle tire, which comprises:

a flexible annular tread member circumferentially extensible and having a circumferential length smaller than the circumferential length of the vehicle tire, the outer side portion of said annular tread member being formed into a plurality of ringlets;

a flexible inner side annular member circumferentially non-extensible and having a circumferential length greater than twice the sum of the axial width of said vehicle tire and the diameter of said vehicle tire but less than the circumferential length of said vehicle tire, said flexible inner side annular member being connected with the inner side end of said annular tread member in coaxial relationship therewith;

a flexible ring member circumferentially extensible and having a circumferential length less than that of said vehicle tire, said flexible ring member crossing all of said ringlets and interconnecting adjacent ringlets; and

an outer side chain assembly connected to all of said ringlets for drawing all of said ringlets radially inwardly.

3,844,325

DUAL PNEUMATIC TIRE CASINGS

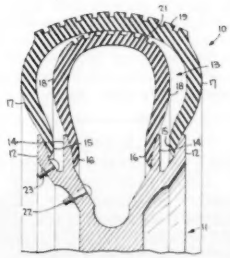
Victor Manuel Betancourt L., Pedro Laplace No. 30 Col. Anzures, Mexico City, Mexico

Claims priority, application Mexico, July 31, 1972, 137392; July 31, 1972, 11171

Filed July 31, 1973, Ser. No. 384,261

Int. Cl. B60c *5/06*

U.S. Cl. 152—158 **2 Claims**



1. A pneumatic vehicle tire and wheel, comprising a wheel rim having an outer pair of annular and radially extending

flanges, an inner pair of annular and radially extending flanges respectively spaced from said outer flanges, an outer pneumatic tire casing having beads, sidewalls and a ground-engaging tread wall, said beads engaging said outer flanges, a separate inner pneumatic tire casing having beads, sidewalls and a ground-engaging tread wall, said inner casing beads engaging said inner flanges, a tire inflation valve mounted on said rim between one of said inner and outer flanges for inflating said outer casing, another tire inflation valve mounted on said rim inwardly of one of said inner flanges for inflating said inner tire casing, said sidewalls of said inner and outer tire casings between spaced apart while said tread walls of said inner and outer casings are in contact with one another upon inflation of both said casings.

3,844,326

HEAVY CONSTRUCTION VEHICLE TIRES

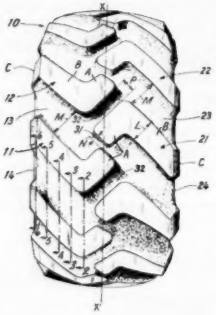
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissments Michelin, Raison Sociale Michelin & Cie, Clermont-Ferrand, France

Filed Mar. 23, 1973, Ser. No. 344,425

Claims priority, application France, Apr. 20, 1972, 72.14099

Int. Cl. B60c *11/04*

U.S. Cl. 152—209 B **9 Claims**



1. In a construction vehicle tire whose tread is composed of two adjacent rows of L-shaped relief elements which succeed each other in the circumferential direction alternately in one row and then in the other row, the long arms of the L-shaped relief elements forming the lateral portions and the short arms of the L-shaped relief elements forming the central portion of the tread, the L-shaped relief elements having their respective arms parallel but being oriented in opposite direction from one row to the other row, the improvement which comprises said L-shaped relief elements being arranged so as to form wide lateral recesses between their adjacent long arms and narrow central grooves between their adjacent short arms, each L-shaped relief element of one row being paired with an L-shaped relief element of the other row, their short arms being adjacent and separated from each other by a narrow central groove which is parallel to the bases of the short arms and has approximately the same length.

3,844,327

VULCANIZABLE ELASTOMERIC SHEET CONTAINING CORD REINFORCEMENT

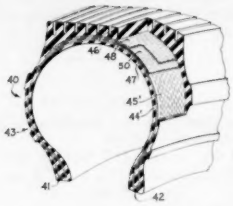
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 10, 1972, Ser. No. 242,704

Int. Cl. B60c *9/06*

U.S. Cl. 152—354 **5 Claims**

1. In a tire construction including spaced wheel rim securement means, a carcass ply connecting with said means and extending between same in toroidal fashion, and a ground-contacting tread carried at the crown of said carcass; the improvement wherein said carcass ply comprises an elastomeric sheet material extending continuously between the spaced wheel rim securement means and having embedded therein a plurality of rows of substantially inextensible reinforcement cord in mutually parallel array, each of said rows consisting of aligned discontinuous lengths of said substantially inextensible cord, said lengths in each row having their terminal ends closely spaced and almost touching, said lengths arranged in a repeating pattern across the entire of said elastomeric sheet and the terminal ends of said lengths forming a repeating pattern, the pattern being such that the terminal ends in any three immediately laterally adjacent lengths in immediately adjacent rows are in staggered relationship so that they can not be connected by a straight line.



3,844,328

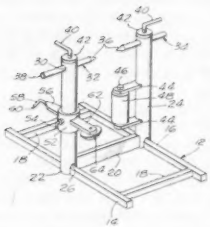
TIRE CHANGER FOR SPOKED WHEELS

Walter L. Lund, 10207 Adoree, Downey, Calif.

Filed Sept. 7, 1972, Ser. No. 286,863

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.24 **4 Claims**



1. A tire changer for spoked wheels having hub assemblies, wherein the improvement comprises: elevated supporting means having laterally spaced hub assembly-engaging means for supporting a wheel between them for rotation about a horizontal axis, a tire bead unseating element, a tire bead seating element, said unseating and seating elements being carried by the elevated supporting means and selectively movable from positions permitting free rotation of the wheel to positions for engaging the bead of a tire, said elevated supporting means comprising a base and a pair of spaced uprights extending upwardly therefrom, pivot pins carried one each by each of said pair of uprights and having a common horizontal axis, at least one of the pivot pins being mounted for adjustment toward and away from the other, and each pivot pin having a recessed wheel axle receiving end portion and being reversible end to end on its respective upright.

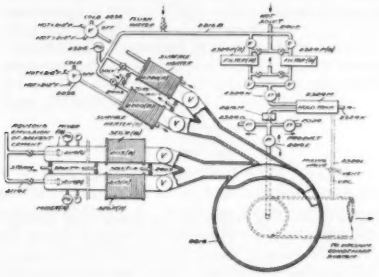
3,844,329
AQUEOUS LATICES OF HIGH POLYMER COMPOSITIONS AND PROCESSES AND MEANS FOR PRODUCING SAME

Oliver W. Burke, Jr., P.O. Box 1266, Pompano Beach, Fla. 33061

Continuation of Ser. No. 102,240, Dec. 28, 1970, abandoned, and a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned, and Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, and Ser. No. 784,596, Dec. 18, 1968, Pat. No. 3,644,263. This application May 9, 1973, Ser. No. 358,705

Int. Cl. B01d *1/22, 1/16, 1/00*

U.S. Cl. 159—6 R **11 Claims**



1. Apparatus for the essentially continuous production of latex with insured mechanical stability from aqueous latex which may contain particles detrimental to the mechanical stability thereof but not capable of removal therefrom by filtration, said apparatus comprising

a. vapor and liquid separating means having combined vapor and liquid inlet means and separate outlets for the vapor and liquid phases separated therein,

b. vapor withdrawal means connected to the vapor outlet of said separating means for essentially continuously withdrawing vapor therefrom,

c. means defining a latex circulating path connected to said separating means for withdrawing latex therefrom and recycling withdrawn latex thereto,

d. two indirect contact heating means each having a latex path therethrough for latex to be heated therein, and a heating fluid path therethrough separate from said latex path, said heating means being provided with

1. means to selectively connect the latex path through either heating means in series in said circulating path while isolating the latex path of the other heating means from said circulating path,

2. means connected to each of said heating means for supplying to the heating fluid path of the indirect contact heating means connected in said circulating path heating fluid at a temperature sufficient to cause selective coagulation from the latex circulating in said latex path of a portion thereof comprising particles detrimental to the mechanical stability of the latex, and

3. means connected to said heating means and operable for simultaneously supplying to the latex path of said heating means isolated from said circulating path, solvent for removing any accumulated coagulum therefrom,

4. means for removing said solvent and dissolved coagulum from the isolated heating means without entering said circulating latex path

whereby coagulum of particles which would be detrimental to the mechanical stability of the latex may be removed from one of said heating means, while coagulum of such particles is being formed in the other of said heating means.

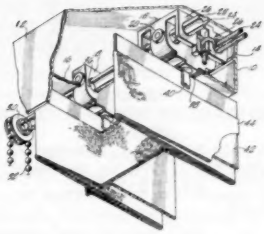
3,844,330
WINDOW COVERING SYSTEM

David L. Hyman, Santa Monica, Calif., assignor to Louver Drape, Incorporated, Santa Monica, Calif.

Filed Dec. 11, 1972, Ser. No. 314,158

Int. Cl. E06b *9/26*

U.S. Cl. 160—166 A **5 Claims**



1. A decorative window covering system comprising:

a vertical blind mechanism,

vertically disposed louvers pivotally mounted to said vertical blind mechanism and dependent therefrom, said vertical blind mechanism providing selective angular orientation of said louvers with respect to said vertical blind mechanism, and

flexible covering material attached to each of said louvers, said flexible covering material being constrained to move with said louvers when said louvers are moved laterally on said vertical blind mechanism, said flexible covering material freely depending from near the upper ends of said vertically disposed louvers to create a drape-like covering, said flexible covering material including a free length thereof between louvers to create a drapery-like effect.

3,844,331
METHOD OF REGULATING THE PRESSURE IN LOW-PRESSURE CASTING PLANTS

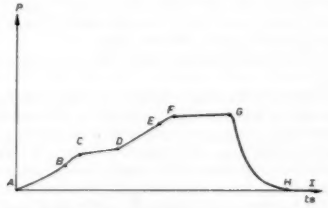
Alphonse Benjamin Py; Jean Henri Lefebvre, and Jean-Claude Pichouron, all of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, France

Filed June 8, 1973, Ser. No. 368,341

Claims priority, application France, June 22, 1972, 72.22546

Int. Cl. B22d *17/32*

U.S. Cl. 164—4 **6 Claims**



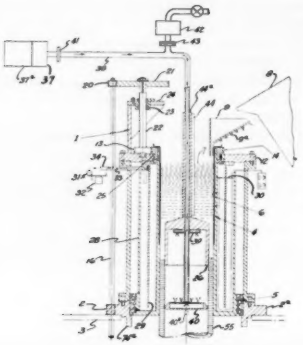
1. In a method of regulating the pressure in a low-pressure casting plant comprising a heated furnace containing molten metal solid at room temperature and a gaseous space overlying the molten metal, a mould disposed externally and above said furnace, a dipper pipe connecting the furnace bottom to the mould bottom, first control means located between said furnace and the mould bottom, second control means dis-

posed in the bottom of said mould, and third control means disposed in the upper portion of said mould, the furnace is supplied in a first step with two separate gas inputs, one of these two inputs being discontinued when the metal engages said first control means while memorizing the pressure in said furnace when the metal engages said second control means; in a second step gas is supplied to said furnace until the mould is properly filled, the memorized pressure being then utilized for delivering the two gas inputs to the furnace, and in a third step the memorized pressure is utilized for discontinuing at least one of said two inputs and regulating the pressure in the furnace during the solidification of the metal in said mould.

3,844,332
MAKING SEAMLESS TUBING BY CONTINUOUS PROCESS

Robert Bucci, 1820 Zehnder Rd., Ambridge, Pa. 15003

Filed Nov. 5, 1971, Ser. No. 196,063
Int. Cl. B22d *11/12*
U.S. Cl. 164—70 **8 Claims**

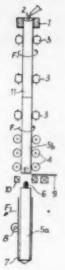


1. In a machine for casting seamless tubing, comprising:
a. a stationary housing,
b. an outer mold positioned within said housing,
c. means for mounting said mold for rotation relative to said housing,
d. means for cooling said mold,
e. a stationary, open bottom pressure bell mounted within said mold, said bell being dimensioned relative to said mold so as to provide an annulus therebetween approximating the diameter of said tubing,
f. means for feeding molten metal into said mold above said bell,
g. means for delivering a gaseous cooling medium under pressure to the area within and below said bell, said gaseous cooling medium serving to cool the tubing formed in said annulus and pressurized the interior wall of the formed tubing below the annulus surrounding said bell thereby to support said tubing against said mold in such region and prevent collapse of such tubing, and
h. a feed mechanism for controlling the feeding of said tubing from said mold consisting of a plurality of spaced drive rollers having a periphery approximately the shape of the tubing, means for mounting said drive rollers for rotation at the same speed as said mold, means for driving said drive rollers at a predetermined speed, braking rollers associated with said drive rollers for holding said drive rollers and thus said tubing to permit the same to be severed.

3,844,333
CONTINUOUS METAL CASTINGS

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Societe Civile D'Etudes De Certifugation, Paris, France

Filed Aug. 21, 1972, Ser. No. 282,121
Claims priority, application France, Aug. 25, 1971, 71.30834
Int. Cl. B22d *11/00*
U.S. Cl. 164—82 **5 Claims**

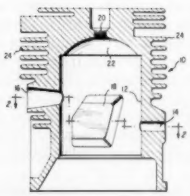


1. In a method of initiating the continuous casting of a metallic object which is to be cut into sections, which method comprises the steps of introducing a false blank beneath the metal being cast to form said object, and receiving said false blank and object successively in guide means and a tipping extractor beneath said guide means, which extractor is dimensioned to tip severed sections of said object having at most a predetermined maximum length out of alignment with said guide means,
the improvement which comprises the steps of employing a false blank comprising a plurality of sections which are screwed together, the length of each section being at most equal to said maximum length, and separating the lowermost section of said false blank from the remainder of said false blank during the descent of said false blank by unscrewing said lowermost section therefrom, and then tipping said lowermost section in said tipping extractor once it has passed below said guide means.

3,844,334
METHOD OF CASTING CYLINDERS

Robert Eugene Frederickson, South Gate, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 20,202, March 17, 1970. This application Dec. 12, 1972, Ser. No. 314,468
Int. Cl. B22d *29/00*
U.S. Cl. 164—132 **12 Claims**



1. A method of molding hollow articles comprising the steps of:
a. providing a mold having a cavity for forming the outer surface of the article;

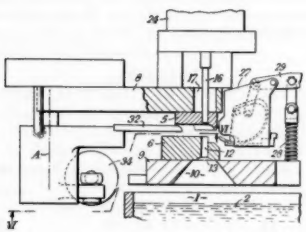
b. providing a core member having an outer surface for forming the inner surface of the article, the outer surface of said core member including a main body portion and at least one protuberance projecting outwardly therefrom;
c. locating the core member within the cavity of the mold to define an article forming space between the outer surface of the core and the inner surface of the mold;
d. introducing molten die casting material into said article forming space and in surrounding relationship with said at least one protuberance;
e. cooling the molten material until it solidifies into a cast article with a configuration encapsulating said at least one protuberance;
f. releasing the solidified cast article from the mold;
g. machining the main body portion of the core from within the cast article leaving only said at least one protuberance remaining, to form a hollow article encapsulating said at least one protuberance of the core; and
h. mechanically impacting the cast article including the encapsulated said at least one protuberance of the core to loosen said encapsulated at least one protuberance free from the hollow article.

3,844,335

MOULDING OF METALLIC ARTICLES

Walter Roy Scott; David Richard Howard Scott, both of Poole, and Nigil Phillip Scott, Wimborne, all of England, assignors to Airvert Limited, Haddenham, Buckinghamshire, England

Filed Mar. 14, 1972, Ser. No. 234,563
Claims priority, application Great Britain, Mar. 15, 1971, 6850/71
Int. Cl. B22c *31/00*
U.S. Cl. 164—265 **12 Claims**



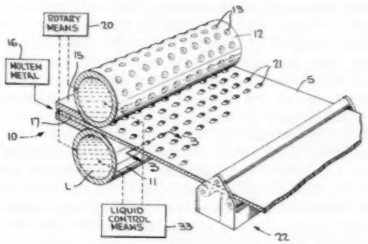
1. A moulding machine for producing moulding metallic articles having partially embedded inserts, the machine comprising two mould supporting members, means for effecting relative movement of said mould supporting members during a moulding cycle, two moulds respectively carried by said two mould supporting members, said two moulds defining a mould cavity when closed, one of said moulds having a first passage extending through said one mould and communicating with the mould cavity, the other of said moulds having a second passage aligned with said first passage and having a projection defining a ledge extending horizontally along an external surface of the other mould, means for inserting one of said inserts between the moulds each time said moulds close in such manner that a projecting flange of said insert engages around said ledge on said other mould, a material delivery member which moves to an aperture in one of the mould supporting members for injecting moulding material, in a fluid or plastic condition, into said first passage in said one mould and thence into said cavity between the closed moulds, a punch which closes the second passage during injection of moulding material into the mould cavity, means for moving said punch with respect to the closed moulds into the first passage to part a sprue or runner, formed by excess moulding material, from an external peripheral edge surface of the moulded article when the latter is fully enclosed between the closed moulds, the displaced sprue or runner dropping out of said first passage, an ejection member and means for moving the ejection member with a horizontal reciprocating action between the two moulds when the latter open, at which stage the moulded article remains hanging on the other mould by virtue of the interengagement of the projecting flange of the insert with the ledge, means for moving said ejection member undergoing an operative stroke for pushing the moulded article to cause the flange to slide horizontally along the ledge, until the moulded article is clear of the other mould, after which the ejection member undergoes a return stroke between the open moulds, the moulds then closing and the aforesaid movements of the parts being repeated in cyclic sychronism to produce further moulded articles.

3,844,336

METHOD OF PRODUCING CONTINUOUS CAST METALLIC SHEET WITH PATTERNED SURFACE

Paul E. Anderson, Torrance, Calif., assignor to Martin Marietta Aluminum, Inc., Torrance, Calif.

Filed Dec. 27, 1972, Ser. No. 319,033
Int. Cl. B22d *11/06*
U.S. Cl. 164—277 **10 Claims**

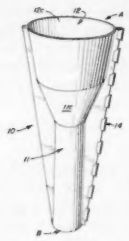


1. The process of continuously casting substantially rigid metallic sheet having a pattern of spaced longitudinally and laterally apart projections on at least one side, said casting being from a substantially closed plenum chamber formed between a nozzle and a pair of endless casting members, comprising feeding a continuous stream of molten metal from the nozzle into the chamber, directing the metal into the nip of said spaced casting members at least one of which having a plurality of spaced apart recesses in the surface according to said pattern, each of said recesses having a depth substantially between 5 to 100 percent of the normal spacing at the nip of said casting members, moving said members in opposite directions away from the nozzle to form a continuous sheet, applying pressure to said molten metal in said nozzle only sufficient to cause the metal to fill the major portion of the chamber between the members and to form a meniscus, controlling the rate of movement of said endless casting members and the rate of cooling to insure that the molten metal is solidifying by the time it contacts the casting member having said recesses and that the apex of each recess at the point of solidification is momentarily at a maximum of from about 17 to 200 percent greater than the normal spacing at the nip of said casting members, and to insure the formation of said meniscus upstream of the point of solidification and having a surface tension strong enough to prevent spilling the molten metal back into said recesses and between said nozzle and said casting members, and squeezing said sheet at least sufficiently to offset shrinkage, whereby there is provided a progressive laying on of the solidifying metal, and without adherence of said sheet to said member having recesses and said sheet is formed substantially free of cross-bands, longitudinal cracks and other imperfections.

3,844,337
POURING SPRUE

Clifford H. Bessett, South Holland, Ill., and James W. Boyd, Crown Point, Ind., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Dec. 18, 1972, Ser. No. 315,864
Int. Cl. B22d 35/04
U.S. Cl. 164—412 9 Claims

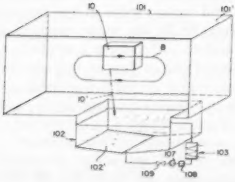


1. A pouring sprue of unitary construction for molten metal or the like, comprising a pair of elongated complemental sections, each section having a recessed center portion and an elongated first side portion extending from said center portion and being integral with and foldably connected to a corresponding elongated first side portion of the other section, said sections, when folded to a closed position having the center portions thereof forming an elongated funnel having an inlet opening at one end and an outlet opening at the opposite end; complemental locking means on corresponding elongated second side portions of said sections and adapted to lock said sections in said closed position, the first and second side portions of a section being separated by the center portion thereof; and seal means formed on said sections adjacent said complemental locking means and extending longitudinally of said sections and effecting a continuous sealed joint between the elongated side portions of said sections when the latter are locked in said closed position, said sealed joint extending substantially the entire length of said funnel.

3,844,338
METHOD OF OPERATING PUBLIC BATH AND THE LIKE

Hans Hilgemann, Neustrasse 48, Recklinghausen, and Hermann Gettman, Dorstener Str. 94, Wanne-Eickel, both of Germany

Division of Ser. No. 881,152, Dec. 1, 1970, Pat. No. 3,666,004. This application Sept. 22, 1971, Ser. No. 182,919
Int. Cl. F24f 3/14
U.S. Cl. 165—3 3 Claims



1. The method of controlling the temperature of an enclosed bath system having a housing defining a bath chamber and a body of water having a surface exposed to the air in said chamber, said method comprising the steps of:

heating said body of water to a temperature above a minimum bathing temperature with low cost energy derived during periods of low energy cost;

permitting the transfer of heat and moisture from said body of water to the air in said chamber;

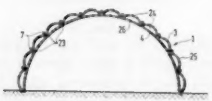
terminating the heating of said body of water during periods of high energy cost; and

continuously abstracting heat and condensing moisture from a portion of the air in said chamber and thereafter returning said portion of said air to said chamber after heating said portion of the air from which heat was abstracted and moisture condensed at least in part with the heat energy originally abstracted from said portion during periods of high energy cost.

3,844,339
INFLATABLE HALL

Vladimir Kranz, 3, Crailsheimstrasse, 8 Munich 23, Germany

Filed Mar. 14, 1972, Ser. No. 234,503
Claims priority, application Germany, Mar. 19, 1971, 2113407, Feb. 28, 1972, 2209376
Int. Cl. F28f 7/00
U.S. Cl. 165—46 6 Claims

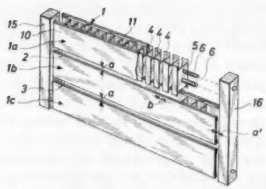


1. An inflatable hall comprising a covering anchored in the ground, blower means maintaining said covering under inside positive air pressure to provide an air filled hall space, said covering being made up of an outer foil and an inner foil, said foils disposed above one another, a supporting network of ropes extending in criss-cross fashion and engaging the outer surface of the outer foil to urge it toward the inner foil and to form a plurality of pockets between the inner and outer foils and means communicating said pockets through said inner foil with said air filled hall space.

3,844,340
CONVECTOR FOR HEATING BUILDINGS

Gunnar Olaf Vestergaard Rasmussen, Rydsavej, 38, Parup, DK-5000 Odense, Denmark

Filed Dec. 19, 1972, Ser. No. 316,491
Claims priority, application Denmark, Dec. 20, 1971, 6237/71; Dec. 8, 1972, 6132/72
Int. Cl. F24h 9/08
U.S. Cl. 165—55 10 Claims



1. In a convector for heating buildings comprising a plurality of horizontally extending and uniform convector modules spaced above each other to form interspaces of predetermined distance, each of said convector modules including at least two through-extending heat conducting horizontal tubes and a plurality of lamella bodies, said lamella bodies being mounted on the tubes and having parallel side lugs bent to extend in parallel with said tubes, and at least one cover plate being located on at least one of the sides of said convector; the improvement comprising: said parallel side lugs of each said lamella body having vertically extended portions at the ends thereof, said cover plate being attached to said convector by

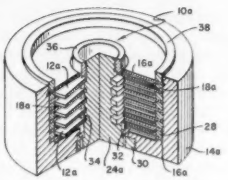
being folded about at least the upper or the lower extended portion of the side lugs of at least the lamella bodies of the uppermost and the lowermost convector module.

3,844,341

ROTATABLE FINNED HEAT TRANSFER DEVICE

John Bimshas, Jr., Westwood, and Edward S. Hickey, Dover, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1972, Ser. No. 255,848
Int. Cl. F28f *5/00, 13/12*
U.S. Cl. 165—86 **1 Claim**



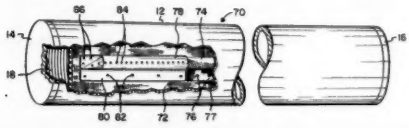
1. A heat transfer device comprising:
a first member adapted for connection to a heat source and having a plurality of equally spaced parallel faced fins;
a second member adapted for connection to a heat sink and having a plurality of equally spaced parallel faced fins alternately disposed in overlapping relationship with the first member fins to form substantially equally sized gaps therebetween;
the fins of the first and second members forming concentric hollow cylinders and being mounted for continuous relative rotation while maintaining the substantially equally sized gaps; and
means providing helium gas under pressure filling said gaps between said fins.

3,844,342

HEAT-PIPE ARTERIAL PRIMING DEVICE

James E. Eninger, Torrance; George L. Fleischman, Inglewood, and Donald K. Edwards, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 1, 1973, Ser. No. 411,955
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **16 Claims**



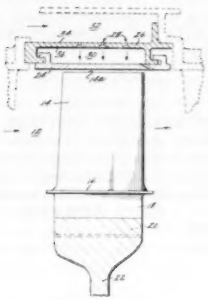
1. A heat pipe having a condenser region and an evaporator region and containing a working liquid;
said heat pipe being provided with at least one artery of substantial length for transporting said working liquid between said condenser and evaporator regions;
means forming at least one venting pore in said artery, said means in said artery being constituted at least in part by a thin-wall portion having at least one pore of capillary size formed therein;
said wall portion being so thin as to keep said pore open through the action of meniscus coalescence of any meniscule amount of said working liquid tending to fill said pore when said pore borders a gas bubble within said artery;
whereby said action of meniscus coalescence permits said pore to remain open for venting noncondensible gas that may be present within said artery during the priming thereof and until such time that said artery is fully primed with said working liquid.

3,844,343

IMPINGEMENT-CONVECTIVE COOLING SYSTEM

Frederick Burggraf, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 2, 1973, Ser. No. 329,043
Int. Cl. F28f *13/02*
U.S. Cl. 165—109 **9 Claims**



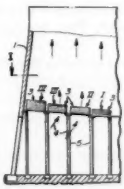
1. An impingement-convective cooling system for directing a flow of cooling fluid from a plenum partially defined by a first plate against a heated opposed second plate for the cooling of the second plate, the system comprising:
an aperture in the first plate, the aperture having a predetermined aperture length corresponding to the thickness of the first plate,
a first diameter for metering cooling fluid flow at a first point along the aperture length, a second and larger diameter at a second point along the aperture length, the first diameter extending along a predetermined portion of said aperture length to form a throat, the ratio of the throat length to said first diameter being less than 0.35.

3,844,344

COOLING TOWER

Siegfried Kliemann, and Vladimir Vodicka, both of Bochum, Germany, assignors to Balcke-Durr Aktiengesellschaft, Ratingen, Germany

Filed Aug. 27, 1973, Ser. No. 392,040
Claims priority, application Germany, Aug. 26, 1972, 2242058
Int. Cl. F28b *1/06*
U.S. Cl. 165—110 **13 Claims**



1. A cooling tower, especially for condensing vaporous media and for cooling liquid media, which includes: a mantle

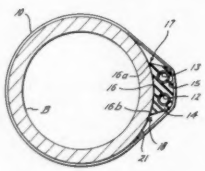
having a lower section provided with intake passage means for admitting a gaseous cooling medium into the interior of said mantle, said mantle also having an upper section provided with discharge means for discharging the heated up gaseous cooling medium after it has performed its cooling action, and a plurality of heat-exchanging elements distributed over the cross section of said cooling tower and located in radial arrangement at a level higher than the level of said intake passages and considerably closer to the latter than to said discharge means, said heat exchanging elements including roof-shaped bodies arranged along concentric circles and including tubes adapted to be connected to and to convey the medium to be cooled, the height of said heat exchanging elements decreasing in radial direction from the outer periphery of said cooling tower to the central axis thereof, said roof-shaped bodies having a gas-impermeable guide wall forming one surface and having a heat exchange wall of said tubes forming the other surface.

3,844,345

ENCAPSULATED CONTROL LINE

Kenneth R. Evans, and Morris Newman, both of Houston, Tex., assignors to Hydril Company, Houston, Tex.

Continuation of Ser. No. 181,391, Sept. 17, 1971, abandoned.
This application June 1, 1973, Ser. No. 366,182
Int. Cl. E21b *43/12*
U.S. Cl. 166—72 **10 Claims**



1. A control line apparatus for operating a valve mounted with a well tubing at a subsurface location in a well from a location exteriorly of the well bore, including:

a. a control tube for carrying control fluid under pressure to the valve from the location exteriorly of the well bore; and

b. a sheath of elastomeric material substantially encapsulating said control tube in the well bore and having an arcuate shape forming an inner surface mounted against the well tubing and a generally convex outer surface for providing a sealing element about the control tube when an annular seal is substantially effected with the well tubing by a blowout preventer to prevent escape of well fluids adjacent the control tube.

3,844,346

SUBSURFACE SAFETY VALVE WELL TOOL OPERABLE BY DIFFERENTIAL ANNULAR PRESSURE

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

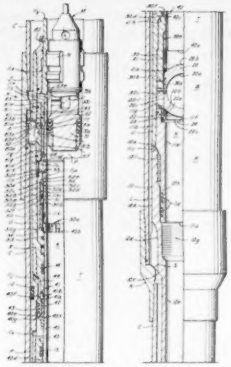
Filed May 14, 1973, Ser. No. 359,760
Int. Cl. E21b *43/12*, *40/00*
U.S. Cl. 166—212 **12 Claims**

1. A well tool adapted for connection in a production tubing including:

a. a flow housing having a bore formed therethrough and comprising a first housing portion and a second housing portion, said housing adapted for connection in the production tubing to form a portion thereof with said bore in communication with a flow passage of the production tubing for enabling flow of fluid through said bore;

b. bore closure means mounted with said flow housing for movement in said bore to and from an open position for enabling flow fluid through said bore and to and from a closed position for blocking flow of fluid through said bore; and

c. means with said flow housing for releasably securing said first housing portion of said flow housing with said second



housing portion of said flow housing, said means for releasably securing comprising means moving in response to a predetermined directional fluid pressure thereon to release said second housing portion from said first housing portion to enable removal of said bore closure means from the well.

3,844,347

WELL PIPE

Friedhelm Stotzel, Kreuztal-Ferndorf; Erwin Dobbeler, Welschen-Ennest, and Voldemar Vaer, Kreuztal-Kredenbach, all of Germany, assignors to Schaubstahl-Werke, Kreuztal, Germany

Continuation of Ser. No. 164,327, July 20, 1971, abandoned.
This application July 26, 1973, Ser. No. 382,744
Claims priority, application Germany, July 29, 1970, 2037478
Int. Cl. E21b *43/08*
U.S. Cl. 166—227 **4 Claims**

1. A well pipe equipped with a number of parallel elongated holes for the admission of water, the holes being designed in such a way that a pressed-out web of wall material bridges the hole and is attached to the wall at the ends of the hole characterized by the fact that the well pipe contains longitudinally-arranged alternate sections in which a first section has the elongated holes arranged with their

lengths extending parallel to the pipe axis and a second section in which the elongated holes are arranged with their lengths extending perpendicular to the pipe axis.

3,844,348

METHOD OF CONTROLLING SUBTERRANEAN FORMATION PERMEABILITY EMPLOYING GRAFT-POLYMERIZED BACTERIAL GUM POLYSACCHARIDE COMPOSITIONS

Charles A. Stratton, Dewey, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 14, 1972, Ser. No. 314,959
Int. Cl. E21b *33/138*, *43/22*
U.S. Cl. 166—246 10 Claims

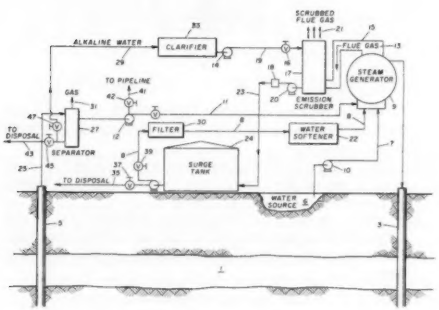
1. A method for reducing the fluid permeability of a porous subterranean formation which comprises the step of contacting said formation with an aqueous composition containing at least one water-soluble chemically modified bacterial gum heteropolysaccharide wherein said polysaccharide is modified by the presence of at least one polymer graft wherein said graft is derived from polymerization of at least one monomer species selected from monoolefins containing up to five carbon atoms wherein said monoolefin has at least one carbon atom singly bonded to at least one substituent selected from the group consisting of cyano, hydrocarbyl-substituted carbamyl, unsubstituted carbamyl, carobxy, or carbalkoxy radicals.

3,844,349

PETROLEUM PRODUCTION BY STEAM INJECTION

Earl S. Snavely, Jr., Arlington, Tex., and Theodore A. Bertness, Whittier, Calif., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,929
Int. Cl. B01d *53/34*; E21b *43/24*
U.S. Cl. 166—272 9 Claims



1. A method of producing petroleum from a petroleum-bearing formation penetrated by a well means comprising:

a. generating steam by injecting feed water into a steam generator and firing said steam generator with a sulfur-containing fuel, said steam generator emitting a flue gas containing sulfur oxides;

b. injecting said steam via said well means into said petroleum-bearing formation;

c. producing petroleum via said well means from said petroleum-bearing formation;

d. passing said flue gas containing sulfur oxides through an emission scrubber vessel;

e. passing an alkaline water through said emission scrubber vessel in counterflow with said flue gas to scrub said sulfur oxides from said flue gas and reduce the alkalinity of said alkaline water;

f. discharging said scrubbed flue gas from said emission scrubber vessel;

g. discharging said water of reduced alkalinity from said emission scrubber vessel; and

h. injecting at least a portion of said discharged water of reduced alkalinity into said steam generator as feed water.

3,844,350

OIL RECOVERY USING POLYMER PRESLUG

Bruce L. Knight, and John S. Rhudy, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Apr. 26, 1973, Ser. No. 354,603
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 9 Claims

1. In a process of recovering hydrocarbon from a subterranean reservoir containing water having at least 500 ppm of divalent cation and wherein the reservoir has an injection means in fluid communication with a production means and a miscible or miscible-like displacement slug which is adversely influenced by the divalent cations is injected and displaced toward the production means to recover hydrocarbon therethrough, the step comprising injecting previous to the injection of the displacement slug about 1 to about 50 percent formation pore volume of an aqueous solution containing about 50 to about 2,000 ppm of a biopolymer, the effect of the aqueous biopolymer solution being to inhibit the tendency of the divalent cations to adversely influence hydrocarbon recovery with the displacement agent.

3,844,351

METHOD OF PLUGGING A WELL

David L. Sutton, and Lloyd G. Carter, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed June 1, 1973, Ser. No. 365,935
Int. Cl. E21b *33/13*
U.S. Cl. 166—293 22 Claims

1. A method of forming a plug in a well bore having liquid standing or flowing therein which comprises the steps of:

preparing a cement composition having a density substantially equal to or less than the density of the liquid in said well bore;

introducing the cement composition into the well bore so that the cement composition is floated at or near the surface of the liquid therein; and

allowing the cement composition to set into a hard impermeable mass in said well bore.

3,844,352

METHOD FOR MODIFYING A WELL TO PROVIDE GAS LIFT PRODUCTION

Henry U. Garrett, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Division of Ser. No. 209,128, Dec. 17, 1971, Pat. No. 3,789,923. This application Nov. 16, 1973, Ser. No. 416,358
Int. Cl. E21b *43/14*, *43/11*
U.S. Cl. 166—297 2 Claims

1. A method of providing gas lift valves in a conventional tubing string comprising the steps of:

a. on a first trip, lowering a perforating device equipped with perforating means through said tubing string and locking said perforating device within said tubing string;

b. on a second trip, lowering a remotely operable actuating device into engagement with said perforating device, actuating said perforating device to cause said perforating means to form one or more perforations in said tubing string, releasing said perforating device from said tubing string and thereafter recovering both said actuating device and said perforating device from said tubing string; and

c. on a third trip, lowering a gas lift valve means into said tubing string and anchoring said gas lift valve means into

said tubing string and anchoring said gas lift valve means in said tubing in pressure communication with said one or more perforations.

3,844,353

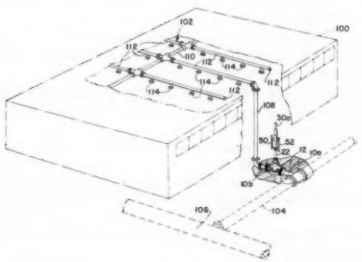
FLUID FLOW CONTROL APPARATUS

Mario Herbello, St. Louis, Mo., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Division of Ser. No. 365,206, May 30, 1973, Pat. No. 3,809,112. This application Feb. 22, 1974, Ser. No. 445,281

Int. Cl. F16k *21/04;* **A62c** *37/06*

U.S. Cl. 169—18 **6 Claims**



1. A fire protection system comprising a plurality of discharge heads mounted in an elevated position in the space to be protected, an underground supply conduit for supplying extinguishant to said heads, a housing having an inlet and outlet registering with said supply conduit under ground, valve means disposed in said housing, actuating means operatively connected to said valve means for moving same between an open position in which extinguishant flow is permitted through said housing and a closed position in which extinguishant flow through said housing is prevented, a portion of said actuating means extending above ground, and resilient means engaging one of said means for normally urging said valve means to said open position to require a continuous manually applied energy input to said portion of said actuating means to move said valve means to said closed position.

3,844,354

HALOGENATED FIRE EXTINGUISHING AGENT FOR TOTAL FLOODING SYSTEM

Eric R. Larsen, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 11, 1973, Ser. No. 378,102

Int. Cl. A62c *5/16*

U.S. Cl. 169—46 **2 Claims**

1. The process of extinguishing a fire in a normally occupied enclosure comprising introducing a volume of C_3F_5Cl sufficient to provide an extinguishing concentration and maintaining said concentration at a value of less than 15 percent until said fire is fully extinguished.

3,844,355

PRESSURE CONTAINERS

Carl-Eberhard Kreipe, Wahmbeck, and Heinz Peckmann, Gottingen, both of Germany, assignors to Alcan Aluminumwerke GmbH, 34 Gottingen, Germany

Filed June 5, 1973, Ser. No. 367,297

Claims priority, application Germany, June 13, 1972, 7222066

Int. Cl. A62c *13/24*

U.S. Cl. 169—71 **5 Claims**

1. A metal pressure container comprising: a. a seamless wall forming said container, said wall having an inwardly domed base portion,

b. a bush integrally formed with said wall disposed substantially at the center of said base portion, said bush having a passageway therethrough, and

c. a valve body sealingly fitted in said passageway such that an outwardly projecting end of said valve body terminates above the plane defined by the bottom of said base portion.

3,844,356

FIRE EXTINGUISHER

Louis F. Allen, and Joseph B. Ott, both of Erie, Pa., assignors to Anglam, Inc., Erie, Pa.

Filed Aug. 23, 1973, Ser. No. 390,863

Int. Cl. A62c *13/00*

U.S. Cl. 169—31 R **14 Claims**

1. A fire extinguisher comprising a tank adapted to contain a fire extinguishing material,

a valve body supported on said tank,

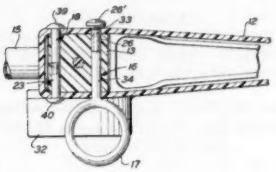
a dispensing means connected to said valve body,

said valve body having a first handle fixed relative thereto and a second handle swingably connected to said valve body.

said second handle being generally channel shaped and receiving means fixed relative to said valve body between the flanges of said channel,

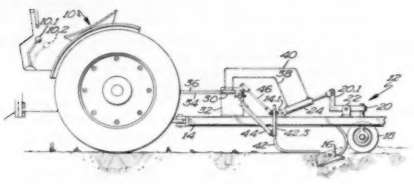
means swingably connecting said second channel to said valve body,

a bore extending through said channel legs and through said valve body,
and a pull pin made of frangible material extending through said bore whereby said pull pin is separated when said handles are moved relative toward each other,



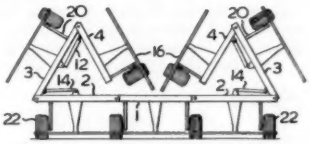
said pull pin has a handle on one end and a reduced size end remote from said handle,
and a head having a sleeve attached thereto,
a bore in said sleeve receiving said reduced size male end of said pull pin,
said head being fixed to said pull pin.

3,844,357
DEPTH CONTROL FOR FARM IMPLEMENT
Earl H. Ellinger, Crookston, Minn., assignor to DEE, Inc., Crookston, Minn.
Filed Oct. 18, 1973, Ser. No. 407,634
Int. Cl. A01b *63/111*
U.S. Cl. 172—4 **9 Claims**



1. In a wheel-mounted implement frame adapted for mounting to a tractor, the latter having a hydraulic pump and a selector and adapted to provide hydraulic fluid under pressure to a respective first or second tractor hydraulic line in correspondence to movement of the selector to forward or reverse positions and to receive returning hydraulic fluid respectively through the second or first tractor hydraulic line,
a control for automatically maintaining the height of a frame-mounted implement with respect to ground level comprising:
a. a double-acting hydraulic cyliner operatively interconnecting the frame and frame wheels to raise and lower the frame with respect to the frame wheels;
b. a control valve carried by the frame and in flow communication with the first and second tractor hydraulic lines, the valve communicating with the hydraulic cylinder through a pair of valve hydraulic lines and having a movable switch with raise and lower positions respectively communicating the hydraulic fluid in the first tractor hydraulic line through the valve with one or the other of the valve hydraulic lines to raise or lower the frame with respect to the wheels;
c. a ground-sensing shoe movably mounted to the frame to permit vertical movement therebetween and having a lower, ground-contacting portion slidable across the surface of the ground and to move vertically with respect to the frame in response to variations in the height of the frame from the surface of the ground;
d. motion-transmitting means for transmitting vertical movement of the sensing shoe to the valve switch to move the switch between its raise and lower positions; and
e. a first bypass line communicating the second tractor hydraulic line through a check valve directly to the one valve hydraulic line, and a second bypass line communicating the other valve hydraulic line directly to the first tractor hydraulic line through a check valve, whereby movement of the selector to the reverse position causes hydraulic fluid to bypass the control valve and to energize the hydraulic cylinder, raising the frame with respect to the wheels.

3,844,358
FOLDING SYSTEM FOR MULTI-SECTIONAL IMPLEMENT
F. William Shuler, 1110 Jubillee Dr., and John Dyck, 840 6th Ave., both of Swift Current, Saskatchewan, Canada
Filed May 11, 1973, Ser. No. 359,538
Claims priority, application Canada, Feb. 16, 1973, 163904
Int. Cl. A01b *15/14*
U.S. Cl. 172—311 **2 Claims**

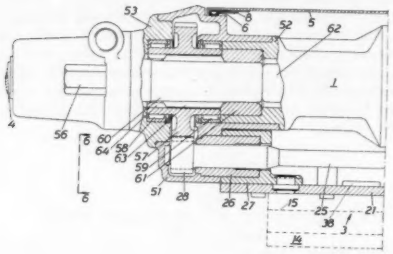


1. In a multi-sectioned field machine having an inner, towing section and a plurality of outer wing sections pivotally hinged to one another and to at least one side of the towing section, means for folding said wing sections relative to one another and to said towing section between unfolded operating and folded towing positions, each of said folds being in excess of 90°, said folding means for each said section comprising; interconnecting adjacent sections by a hydraulic ram; pivotally connecting the piston rod end of the ram to one section;
a lug on the adjacent section for securing the body end of the ram thereto;
the length of the ram between extended and retracted positions being great enough to fold the adjacent section beyond 90°; and
the height of said ram body lug being sufficient to provide that, between the folded and unfolded positions of said sections, the piston rod end of the ram does not reach an over centre mark with regard to the body end of the ram.

3,844,359
ROCK-DRILLING MACHINE
Birger Zettergren, 6 Langsjovagen, 131 00 Nacka, Sweden; Hans Hjalmar Ahlgren, deceased, late of 54 Lovasvagen, 191 45 Sollentuna, Sweden (by Ella Anita Ahlgren, administratrix), and Elsa Margareta Cederlund, administratrix, 11B Millakersgatan, 792 00 Mora, Sweden
Filed Mar. 1, 1973, Ser. No. 337,181
Claims priority, application Sweden, Mar. 10, 1972, 3040/72
Int. Cl. E21c *1/10*
U.S. Cl. 173—105 **6 Claims**

1. A device at rock-drilling machines comprising a pressure-fluid-driven hammer device for impacting a drill-rod, a pressure-fluid-driven rotary drive motor, situated behind the hammer device, for rotating the drill-rod via a drill-sleeve associated with the hammer device at the front end thereof and a slide for guiding the hammer device along a feed-beam said slide being made as a unit which is separable from the hammer

device said slide member containing a power transmission having an input end which cooperates with an output shaft of



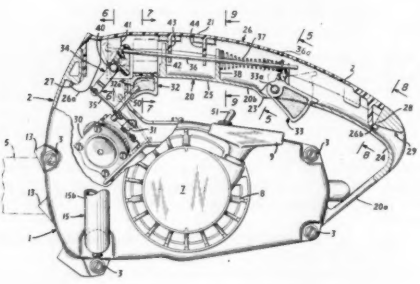
the rotary drive motor and an output end which cooperates with the drill-sleeve.

3,844,360

HAND HELD POWER TOOL WITH DUPLEX HANDLE

Richard F. Green, Darien; Albert E. Anderson, North Greenwich, both of Conn., and Alexander J. Guarino, Tuckahoe, N.Y., assignors to Textron Inc., Providence, R.I.

Filed Dec. 18, 1972, Ser. No. 315,846
Int. Cl. B27b *17/00*
U.S. Cl. 173—170 **18 Claims**



1. In a hand held power tool comprising a power unit having a front and a rear, said power unit comprising a casing and a motor in the casing and having speed control means, and a tool unit disposed at the front of the power unit and driven by said power unit, means for manually holding and controlling said power tool comprising a first handle disposed transversely at the front of the power unit and a second handle extending over the power unit from the rear toward the front thereof, said second handle having two separate hand grip portions arranged in tandem, namely a forward hand grip portion comprising a forward portion of said second handle and located approximately over the center of gravity of the power tool and a rearward hand grip portion comprising a separate rearward portion of said second handle and located wholly rearwardly of said forward hand grip portion and rearwardly of the center of gravity of the power tool, first motor control means at the forward end of the forward hand grip portion of said second handle in position to be digitally operated by an operator holding said forward hand grip portion, second motor control means forward of the rearward hand grip portion of said second handle in position to be digitally operated by an operator holding said rearward hand grip portion, said second motor control means being located between said forward hand grip portion and said rearward hand grip portion and means connecting said first and second motor control means with said second control means of the motor, whereby said motor can be controlled by an operator holding said second handle by either said forward hand grip portion or said rearward hand grip portion.

3,844,361

CLOSED CIRCUIT METHOD OF CIRCULATING A SUBSTANTIALLY SOLID FREE DRILLING FLUID

Jack M. Jackson, 4518 Willowbend Blvd., Houston, Tex. 77035

Division of Ser. No. 101,177, Dec. 23, 1970, abandoned. This application Apr. 19, 1973, Ser. No. 352,527
Int. Cl. E21b *21/04*
U.S. Cl. 175—66 **9 Claims**

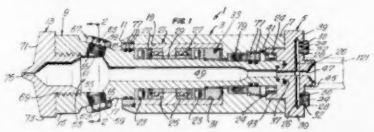
1. A closed circuit method of circulating a substantially solid free drilling fluid comprising (1) formulating a drilling fluid based on water, including an additive to inhibit drilled solids from disintegrating, water soluble weighting agents and a viscosifier consisting of material having no gel strength and no structured viscosity, (2) pumping said drilling fluid down the wellbore through the drilling string and bit and back up to the surface in the annulus surrounding the bit and drill string, (3) screening the drilling fluid to separate out and discard the coarse particles (4) removing the major portion of sand silt and other particles from said drilling fluid by settling and decantation, (5) removing the solids remaining in said drilling fluid by mechanical means and, (6) returning the cleaned-up substantially solid free drilling fluid to the wellbore.

3,844,362

BORING DEVICE

Ketil E. Elbert, 631 Cote St. Antoine Rd., Westmount, Montreal, Quebec; Theodorus S. T. Janssen, 1317 Lemoine St., Chambly West, Montreal, Quebec, and Karl J. Gotzmann, 739 Rue Cartier, Marieville, Quebec, all of Canada

Filed May 14, 1973, Ser. No. 360,114
Int. Cl. E21b *3/12, 7/18*
U.S. Cl. 175—94 **5 Claims**



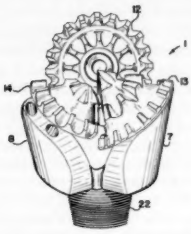
1. A device for boring holes through ground comprising a body having a front end and a rear end, a boring head rotatably mounted in the body and projecting from said front end, said boring head having a boring member at its free end, two or more drive jets symmetrically disposed about said body rear end and having an orifice positioned to release fluid pressure axially of said body to impart a forward pressure to said boring head, first passage means for directing fluid through the body to said two or more drive jets, two or more torque generating jets symmetrically disposed about said head and rearwardly thereof, second passage means for directing fluid to said torque generating jets in the boring head for ejecting fluid tangentially from the boring head to impart a torque and a stabilizing forward thrust to said boring head, fluid delivery means connected to the rear end of said body and in communication with said first and second passage means, said drive jets and torque generating jets having an orifice of selected diameter to provide a predetermined rate of rotation and penetration of said boring head at a preselected fluid pressure applied to said first and second passage means and to maintain said body in a substantially straight line of penetration when boring through ground.

3,844,363

DRILL TOOL

Edward B. Williams, Jr., P.O. Box 648, 103 Mullaney Rd., Greenville, Tex. 75401

Filed June 11, 1973, Ser. No. 368,755
Int. Cl. E21b 9/10
U.S. Cl. 175—227 7 Claims



1. A drill tool comprising:

a. a body member having a passage therein, said passage extending along a longitudinal axis of said body member and between a fluid receiving end and a closed end;

b. a plurality of circumferentially spaced arms extending from said body member adjacent the closed end of said passage in said body member, each of said arms having a leading side and a trailing side;

c. a plurality of axle portions each extending from a respective one of said arms and along a respective axis intersecting the longitudinal axis of said body member in a manner to define a respective acute angle between the axis of the respective axle portion and the longitudinal axis of said body members;

d. a plurality of cutting cones each rotatably mounted on a respective one of said axle portions, said cutting cones each having surfaces in engagement with respective exterior surfaces of said respective axle portions;

e. means on each of said axle portions and said respective cutting cone thereon for retaining and circulating lubrication material for lubricating engaging surfaces of said cutting cones and said respective axle portion;

f. a flow passage through one of said arms with a portion of said flow passage extending along the axis of rotation of the cutting cone mounted on one said arm, the portion of said flow passage through said one of said arms being positioned to direct the fluid toward a bottom of the drill hole and into a space between a pair of adjacent cutting cones; and

g. a second flow passage through one other of said arms with a portion thereof extending toward an intersection of a side and a bottom of the drill hole for directing the fluid toward said intersection, the portion of said flow passage through said one other of said arms being positioned on the trailing side of said one other of said arms to thereby direct the fluid from said trailing side and toward said intersection of the side and bottom of the drill hole and toward the cutting cone on said one of said arms to clear a space ahead of said cutting cone and move drilling debris into the path of the fluid from said flow passage through said one of said arms.

3,844,364

HYDROSTATIC ROCK BIT LUBRICATION SYSTEM

Morgan Levon Crow, Dallas, Tex., assignor to Dresser Industries Inc., Dallas, Tex.

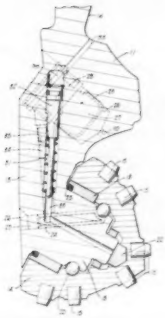
Filed Oct. 23, 1973, Ser. No. 408,987
Int. Cl. E21b 9/10, 9/35
U.S. Cl. 175—228 23 Claims

1. In an earth boring bit that operates in a fluid filled borehole wherein said fluid is subjected to periodic pressure variations, said earth boring bit including a bit body, a rotatable cutter, bearing means for promoting rotation of said cutter and a seal between said rotatable cutter and said bit body, a lubricant circulation system, comprising:

a lubricant reservoir in said bit body;

passage means for channeling lubricant from said lubricant reservoir to said bearing means and from said bearing means to said lubricant reservoir;

one-way valve means in said passage means for providing one-way flow of lubricant in said passage means;



a pumping chamber in said bit body;

pumping means for pumping lubricant through said passage means, said pumping means including a movable pumping element positioned in said pumping chamber, said movable pumping element responsive to said periodic pressure variations; and

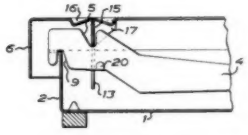
means for allowing said periodic pressure variations to be transmitted to said movable pumping element.

3,844,365

PLATFORM-TYPE SCALE

Bengt Anders Ek; Hans Goran Ek, and Karl-Gustav Ek, all of 330 23 Smalandsstenar, Ljunggatan 29, Sweden

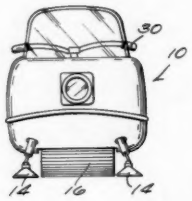
Filed Jan. 19, 1973, Ser. No. 324,963
Claims priority, application Sweden, Mar. 8, 1972, 2921/72
Int. Cl. G01g 21/08
U.S. Cl. 177—256 5 Claims



1. In a weighing scale having a base, a platform upon which a load to be weighed is received, a load sensing mechanism, indicator means associated with said load sensing mechanism to indicate the load sensed thereby, and lever means that transmit load forces to the load sensing mechanism in accordance with the load received on said platform, the improvement which comprises a plurality of levers coupled to said load sensing mechanism to transmit load forces thereto, a plurality of bosses on said platform each having a cratered surface, and a plurality of load transmitting members each disposed for engagement with a corresponding lever and for engagement with a corresponding boss on said platform to transmit load forces therefrom to the lever, said load transmitting members having surfaces complementary to the cratered

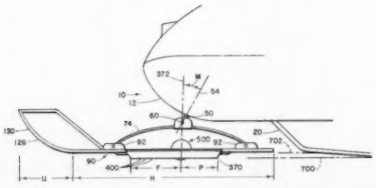
surfaces of said bosses and disposed for captive engagement therewith to stably engage same without connection thereto, said load transmitting members having surfaces complementary to the surfaces of said levers and disposed for captive engagement therewith to stably engage said levers without connection thereto.

3,844,366
STEERING ASSEMBLY FOR SNOWMOBILE
Edgar Rose, Glencoe, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Feb. 9, 1973, Ser. No. 331,011
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **7 Claims**



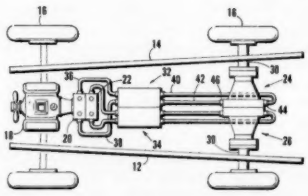
1. A snowmobile comprising a frame, a pair of transversely-spaced runners for supporting said frame, means for rotatably mounting each of said runners on said frame and including a generally vertical shaft having an upper end portion, a steering assembly including a steering column, and means operably connecting said runners to said steering assembly for turning said runners in response to steering actuation of said steering assembly, said connecting means including a steering lever having a pair of spaced arms, an end section integrally connecting said arms, and axially aligned apertures in said arms and adjacent said end section for receiving said upper end portion of said shaft, and a steering rod having a first end operably connected to said steering column and a second end pivotally connected to said steering lever between said arms at a location remote from said apertures.

3,844,367
SNOWMOBILE SKI SYSTEM
Henry Flohr, Saratoga, Wyo.
Filed July 26, 1973, Ser. No. 382,682
Int. Cl. B62m *27/02*; **B62b** *17/00*
U.S. Cl. 180—5 R **9 Claims**



1. A ski for a snowmobile comprising a central portion having a main section and a forward section, said forward section being attached to the forward end of said main section, said main section having a generally horizontal under surface, said forward section having an under surface upwardly inclining toward an upper forward end, said main section of said ski being elongated from front to rear and having a longitudinal ski-axis extending through an area-center of the under surface thereof in the direction of said elongation, an elongated first fin attached to said ski and extending downwardly from adjacent portions of said ski, said first fin being disposed to one side of said ski-axis as said ski is seen in bottom plan view, said first fin being elongated from a forward end thereof to a rearward end thereof, the lower edge of said first fin lying in a first plane which is inclined with respect to said axis gradually more toward said ski-axis at its rearward end and disposed at an acute angle with respect to said ski-axis, said ski having a second fin thereon similar to said first-mentioned fin and having a similar position on said ski as described for said first fin except that said second fin is on the other side of said axis from said first fin whereby said fins each incline inwardly toward said axis and toward each other at their rearward ends, the rearward ends of said fins being spaced apart for allowing snow to pass therebetween, the forward ends of said fins being spaced apart a greater distance than the rearward ends of said fins whereby units of snow are received between the forward ends of said fins and said units each become packed between said fins as the ski passes over each of said units of snow, said packing causing the vertical height of each said unit of snow to increase as the fins pass by each snow unit since each said unit of snow is compressed from its sides into a lesser dimension laterally of said ski as said ski passes over it, the said increased vertical height tending to support said ski above the general level of surrounding snow higher than would be the case if said fins were not inclined forward to each other.

3,844,368
HYDRAULIC DRIVE SYSTEM
Vincent Melli, 99 Amelia St., Toronto, Ontario, Canada
Filed Jan. 24, 1972, Ser. No. 219,989
Int. Cl. B60k *3/04*
U.S. Cl. 180—66 R **3 Claims**



1. A hydraulic drive system for a wheeled vehicle comprising fluid pressurizing means; drive means for said pressurizing means; fluid conduit means providing fluid communication between said pressurizing means and each of said fluid motors; control valve means disposed in said fluid conduit means and adapted to selectively reverse fluid flow to said fluid motors and to selectively bypass fluid flow from said fluid motors, said reversible fluid motors comprising a hollow stationary housing defining outer stator means and having a plurality of axially extending linear grooves on the inner surface thereof; a hollow rotor member mounted for rotation within said outer stator means and having a plurality of helical grooves on its outer surfaces defining with said linear grooves of said outer stator means a first generally annular fluid passageway means between said outer stator means and said rotor member, said rotor member further having a plurality of helical grooves on its inner surface; an output shaft secured to said rotor member and extending outwardly of said housing; a stationary mandrel positioned within said rotor member and defining inner stator means; said mandrel being rigidly secured to said housing and having a plurality of axially extending linear grooves on its outer surface defining with said helical grooves on the inner surface of said rotor member a second generally annular fluid passageway means between said rotor member and said inner stator means; fluid connector means providing fluid communi-

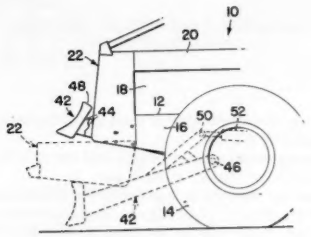
cation between respective first axial ends of said first and second fluid passageway means; and a pair of inlet ports in said housing respectively communicating the other axial ends of said first and second fluid passageway means with said valve means, whereby said first and second fluid passageway means are connected in series-flow relationship.

3,844,369

TRACTOR GRILLE HOUSING MOUNTING

Kenneth Roger Schroeder, Holy Cross, and Lyle Eugene Miller, Dubuque, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sept. 27, 1972, Ser. No. 292,549
Int. Cl. B60k *11/04*
U.S. Cl. 180—68 P **3 Claims**



1. In the combination of a tractor of the type including a lower fore-and-aft extending main frame supporting a radiator and fan assembly at one end thereof and including opposite generally planar upright side surfaces, a massive grille housing extending around the radiator and fan assembly and having opposite sides respectively detachably secured to the opposite upright sides of the main frame, the improvement comprising: said grille housing being detachably secured to said main frame by removable fastener means including first, second and third pairs of axially aligned bolts respectively inserted through aligned apertures in the oppsite upright frame surfaces and grille housing sides; the apertures in the grille housing sides which receive said third pair of bolts being located above and curved arcuately about the axis defined by the second pair of bolts whereby said grille housing may be pivoted about the axis defined by the first pair of bolts when the first pair of bolts are the only fasteners connecting the grille housing to the main frame, and said grille housing may be pivoted about the axis defined by the second pair of bolts within the limits permitted by the arcuate apertures receiving said third pair of bolts when the second and third pairs of bolts are the only fasteners securing the grille housing to the main frame.

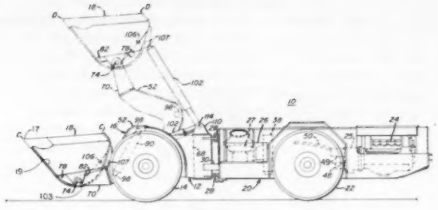
3,844,370

LOADING MACHINE

John A. Belkovicz, 20 Woodland St., and Ernald F. Mullen, 23 Edwin Ave., both of Claremont, N.H. 03743

Filed Oct. 11, 1972, Ser. No. 296,571
Int. Cl. B60k *17/30*
U.S. Cl. 180—73 R **4 Claims**

1. A loading machine comprising: a front frame portion; an elongated rear frame portion pivotally connected to said front frame portion for pivoting about a vertical axis; power means mounted on said rear frame portion; a differential wheel and axle assembly; a support frame mounted on said axle assembly; forward and rearward pivot means pivotally connecting said frame with said rear frame portion; said pivot means coaxially aligned on an axis extending longitudinally of said rear frame portion; power transmitting shaft means drivingly communicating between said power means and said axle assembly; and at least the portion of said shaft means in driving



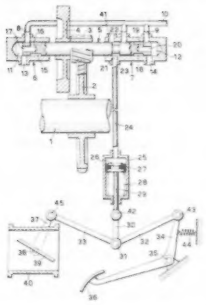
engagement with said axle assembly being coaxial about said axis throughout the normal operation of said loading machine.

3,844,371

ANTI-SKID DEVICE FOR MOTOR VEHICLES

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo, S.p.A., Milan, Italy

Filed Oct. 15, 1971, Ser. No. 189,720
Claims priority, application Italy, Oct. 19, 1970, 31182/70
Int. Cl. B60t *8/16*
U.S. Cl. 180—77 R **6 Claims**

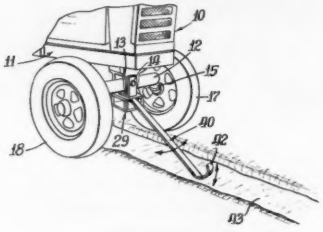


1. An antiskid device for motor vehicles having wheels, at least some of which wheels are driving wheels, comprising means responsive to the speed differentials of the driving wheels, a shiftable body having retaining means for retaining said body in an idle position, means for converting the speed variations as sensed into corresponding axial shifts of at least said shiftable body, means for reducing the torque applied to the wheels, and means for connecting said shiftable body to said means for reducing the torque applied to the wheels, the improvement that said responsive means and said conversion means include a first rotatable helically toothed gear, a shaft rotated at a speed proportional to that of the driving wheels, said first gear being keyed to said shaft, a second rotatable helically toothed gear having substantial inertia in engagement with the first gear, and said second gear being coupled to the shiftable body to be axially moved as an entity therewith, the arrangement being such that until the motor vehicle runs at a substantially constant speed, the second gear rotates synchronously with the first gear and is not axially moved, yet if the motor vehicle undergoes an acceleration or deceleration exceeding a threshold value depending on the inertia of the second gear, the second gear rotates synchronously with the first gear, but is also axially moved to impart a similar axial movement to the shiftable body, to which it is coupled.

3,844,372
AUTOMATICALLY GUIDED TRACTOR

Delbert M. Neece, RFD 1, Gardner, Ill. 60424

Filed Dec. 13, 1973, Ser. No. 424,429
Int. Cl. B62d 1/26
U.S. Cl. 180—79.1 7 Claims



1. An auxiliary control for automatically guiding an agricultural tractor of the type having forwardly disposed steerable wheels and a power steering mechanism for turning said wheels in either direction, and the field over which the tractor is to be guided having feeler cooperating means, said auxiliary control comprising a frame structure journally mounted on a vertical axis on said tractor at a location adjacent the forwardly disposed steerable wheels, a feeler element, means mounting one end of the feeler element on said frame structure, the other free end of said feeler element engaging the feeler cooperating means in the field, whereby a guiding of the free end of the feeler element controls and effects rotation of the frame structure about its vertical axis, spaced apart electro-magnetic proportioning switches fixedly mounted on said frame structure, said electro-magnetic proportioning switches having operating ends arranged in spaced apart positions on an arcuate path, a vertically disposed shaft journally mounted for rotation in said frame structure, an arcuately shaped quadrant disposed within said frame structure and fixedly carried on said vertically disposed shaft, said arcuately shaped quadrant having a center common with the center of the arcuate path and concentrically disposed within said arcuate path, an electro-magnetic field means mounted on said arcuately shaped quadrant and being spaced radially inwardly of the operating ends of the electro-magnetic proportioning switches, said electro-magnetic field means having its spaced apart terminal endings disposed substantially midway of each operating end of the electro-magnetic proportioning switches, whereby relative movement of the quadrant with respect to the electro-magnetic proportioning switches causes the power steering mechanism to be operated in one direction or the other depending on which electro-magnetic proportioning switch has greater overlapping association with the electro-magnetic field means, linkage means joining said steerable wheels with said vertically disposed shaft and its quadrant whereby when the wheels are steered they cause a like rotation of the vertical shaft and the quadrant to quickly restore the normal relationship of the electro-magnetic proportioning switches with the electro-magnetic field means.

3,844,373
STEERABLE VEHICLE

Ralph Minnite, P.O. Box 198, Cantua Creek, Calif.

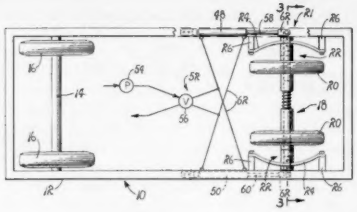
Filed Jan. 26, 1973, Ser. No. 327,225
Int. Cl. B62d 3/14, 5/10
U.S. Cl. 180—79.2 R 7 Claims

1. A steerable vehicle comprising:

A. an endless beam defining a closed frame of a substantially symmetrical configuration;

B. a plurality of mutually spaced axles traversing said frame, at least one of said axles being characterized by a plurality of separable segments;

C. coupling means for joining the opposite end portions of said plurality of axles with said frame including at least one pair of cam blocks affixed to said frame, each being provided with a pair of downwardly diverging, bifurcated cam surfaces for alternately engaging one end portion of one axle of said plurality of axles as oscillatory motion is imparted to the axle;



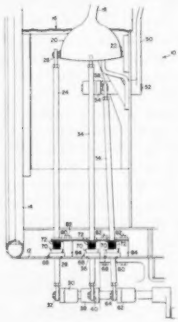
D. actuating means connected with said one axle for imparting thereto oscillatory motion; and

E. means for supporting said frame for lateral motion including a plurality of wheels mounted for rotation on said plurality of axles in an enclosed relationship with said frame.

3,844,374
CONTROL ROD ORIFICE SEAL ASSEMBLY

Wayne Allman Downey, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 29, 1973, Ser. No. 364,733
Int. Cl. B62d 25/20
U.S. Cl. 180—90.6 6 Claims



1. In combination with a vehicle cab including a wall having at least one aperture therein and a control means mounted in the cab and including a control element extending through and being loosely received in said aperture and thus defining a clearance space between the periphery of the aperture and the control element, a seal assembly for tightly closing said clearance space, comprising: an apertured relatively thick washer-like member being loosely received on said control element and having a first side in sliding engagement with said wall and having a second side facing away from said wall; said washer-like member being dimensioned so that said first side always overlaps the entire periphery of said aperture; a seal

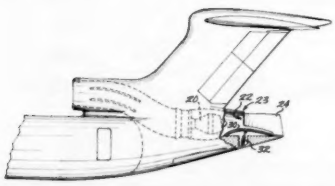
member having a bore extending therethrough and having a spherically contoured surface portion surrounding one end of said bore; said seal member being mounted with said control element received in said bore and with said surface portion facing said washer-like member, said bore having a dimension disposing it in sliding and sealing engagement with said control element; said washer-like member having a surface portion surrounding the aperture thereof and being configured complementary to and receiving said spherically contoured surface portion of said seal member; and resilient biasing means urging said seal member against said washer-like member and said washer-like member against said wall.

3,844,375

NOISE SHIELD FOR JET ENGINE EXHAUST

Michael E. Manca, Bellevue, and Robert H. Drinnon, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 30, 1973, Ser. No. 356,022
Int. Cl. B64d *33/06*
U.S. Cl. 181—33 HC **2 Claims**



1. Apparatus for shielding the sound of the exhaust nozzle flow from a jet engine mounted in an aircraft wherein the nozzle flow discharges over an aft extending variable ramp surface having a raised cruise flight position, and a lowered takeoff and landing position, comprising

a pair of shield members adjustably mounted on opposite sides of the exhaust nozzle on an axis transverse to the longitudinal axis of the aircraft so as to extend laterally outwardly and upwardly therefrom and form rearwardly converging surfaces;

said shield members having a chord length adjacent the exhaust nozzle of not less than approximately three diameters of the exhaust nozzle and being positioned vertically on each side of the exhaust nozzle so as to intersect the exhaust nozzle exit plane below the raised cruise flight position of the vertical ramp;

means for varying the angular position of the shield members about their axes for scooping up atmospheric airflow adjacent to the exhaust nozzle and directing it into the increased nozzle exit area produced by the lowering of the variable ramp surface for the sound shielding mode so as to form an intermediate mixed boundary layer flow between the engine exhaust flow and the ramp surface for shielding the downward radiation of the engine exhaust noise during takeoff and landing of the aircraft.

3,844,376

CLAMSHELL NOISE SHIELD FOR ENGINE EXHAUST

Michael E. Manca, Bellevue, and Robert H. Drinnon, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 30, 1973, Ser. No. 356,038
Int. Cl. B64d *33/06*
U.S. Cl. 181—33 HC **2 Claims**

1. A noise shielding apparatus for the exhaust nozzle flow in jet aircraft engines comprising

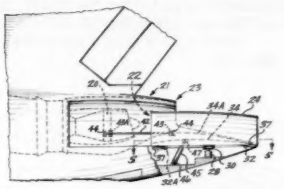
a pair of shield members mounted for longitudinal movement along opposite sides of the exhaust nozzle,

said shield members extending in the vertical direction to cover a minimum of fifty percent of the height of the exhaust nozzle when in a fully extended position,

first means for moving the shield members rearwardly to extend beyond the exhaust nozzle exit plane a distance at least approximately three nozzle diameters,

the leading edges of said shield members extending forwardly of the nozzle opening by a distance of at least approximately one-fourth of the nozzle diameter when the shield members are in their fully extended position,

second means for moving the shield members outwardly to scoop atmospheric airflow adjacent the exhaust nozzle,



a variable ramp forming the lower surface of the exhaust nozzle when in a first position,

means for moving the variable ramp between the first position and a second position located below said first position a distance approximately equal to one-fourth of the nozzle diameter,

whereby the atmospheric airflow is forced between the exhaust nozzle flow and the shield members, said variable ramp surface forming an extension of and connection between said shield members when in its second position.

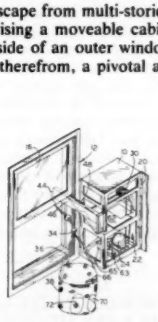
3,844,377

VEHICLE FOR EVACUATING BUILDINGS

William Wilkins, Fort Wayne, Ind.

Filed Mar. 5, 1973, Ser. No. 337,885
Int. Cl. A62b *1/02*
U.S. Cl. 182—6 **6 Claims**

1. A vehicle for escape from multi-storied buildings during emergencies, comprising a moveable cabinet disposed adjacent to and at one side of an outer window of a building to provide free egress therefrom, a pivotal arm operatively secured to and pivotable on a vertical axis connected with said cabinet and moveable from a retracted position within said cabinet to a second position extending out of but in non-contacting relationship with said window, a storage drum within said cabinet having an elongated support line received on said drum, means forming a part of said pivotal arm and adapted for receiving said elongated support line and providing for movement from said drum through said means to effect free vertical movement in a downward direction through said window, a carriage secured to said line and adapted to be lowered with an occupant therein from the vertical position of



said cabinet to ground level, motor means operatively combined with said storage drum for effecting winding and unwinding movements thereof whereby the occupant is selectively raised or lowered, and remotely operable control means for said motor means to control the raising and lowering movements of said carriage together with the occupant therein.

3,844,378

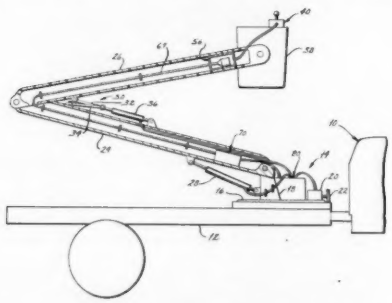
CONTROL SYSTEM FOR AN AERIAL DEVICE

Roy Balogh, Ladue, Mo., assignor to McCabe-Powers Body Company, St. Louis, Mo.

Continuation of Ser. No. 165,916, July 26, 1971, abandoned, and a continuation-in-part of Ser. No. 31,577, April 24, 1970, abandoned. This application May 31, 1973, Ser. No. 365,488

Int. Cl. E04g *1/18;* **F15b** *13/044*

U.S. Cl. 182—141 **19 Claims**



1. A control system in combination with an aerial device having a movable beam assembly and a workman's support means movable between an extended limit position and a retracted limit position, said control system comprising a lamp assembly at a first station on said aerial device, said lamp assembly having at least one lamp for producing a light beam, said lamp assembly having means for controlling and varying the light intensity of said light beam, light transfer path means for transmitting said light beam to a second station remote from said first station, light sensing means at said second station for sensing variable light intensities of said light beam and producing an electric current in response to the light intensity of said light beam, the magnitude of said electric current produced by said light sensing means being proportional to the light intensity of said light beam, said control system further including variably responsive drive means communicating with said light sensing means and said beam assembly for operating said beam assembly at variable speeds in proportion to the magnitude of electric current produced by said light sensing means whereby the rate of movement of said beam assembly by said drive means is substantially proportional to the light intensity of said lamp.

3,844,379

ELECTRONIC MUSICAL INSTRUMENT WITH KEY CODING IN A KEY ADDRESS MEMORY

Norio Tomisawa; Yasuji Uchiyama; Takatoshi Okumura, and Thomas Arlo Stauffer, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Dec. 27, 1972, Ser. No. 318,962

Claims priority, application Japan, Dec. 30, 1972, 47-1502; Dec. 30, 1971, 46-1504; Feb. 26, 1972, 47-19911; Feb. 26, 1972, 47-19912; Feb. 26, 1972, 47-19913; Feb. 22, 1972, 47-18359; Feb. 22, 1972, 47-18360; Dec. 30, 1971, 46-1503

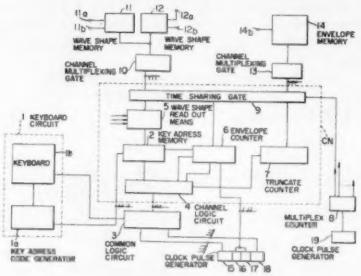
Int. Cl. G10h *1/02, 5/02*

U.S. Cl. 84—1.01 **19 Claims**

1. An electronic musical instrument comprising, in combination:

a. a preloaded wave shape memory in which a multiplicity of amplitude samples of at least one period of a complex musical tone wave shape have been stored in analog representation, said wave shape memory having for each sample a respective readout control terminal whose energization causes the respective sample to be read out of said memory and

b. read out means coupled to the read out control terminals of said wave shape memory for repetitively reading out in succession the stored samples of the wave shape in said memory at a selectable rate and producing therefrom repeated cycles of voltage, each cycle having a wave shape matching that of said stored wave shape and a



period determined by the selected rate of readout, said read out means comprising a key address memory for storing a key address code consisting of a note code, an octave code and a keyboard code, a selecting circuit for selecting a tone clock pulse from among a plurality of tone clock pulses at frequencies corresponding to respective keys in response to note and octave codes stored in said key address memory, a wave shape readout counter receiving said selected tone clock pulse, and gate circuitry for receiving the output of each stage of said wave shape readout counter and successively applying an energizing output corresponding to the count of said counter to each readout control terminal of said wave shape memory.

3,844,380

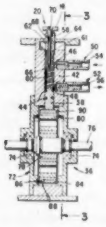
POWER-DRIVEN CHAIN SAW WITH AUTOMATIC AND MANUAL LUBRICATING PUMP

William A. Batson, Pickens, S.C., assignor to The Singer Company, New York, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,584

Int. Cl. F16n *13/08, 13/14*

U.S. Cl. 184—15 R **14 Claims**



1. In a power-driven chain saw having a saw chain and a saw thereon, a sprocket shaft rotatably supporting said chain, a guide bar for guiding said saw chain along a predetermined

path, and a lubricating pump which includes a reciprocable plunger for supplying lubricant for said saw chain, the improvement which comprises:

a. a wobble ring mounted so as to cyclically reciprocate said plunger in a predetermined time-phase relationship with the rotation of said saw chain;

b. a sun element mounted within said wobble ring operably connected to the driving means for said chain saw; and

c. at least one planetary member interposed between said sun element and said wobble ring, the relationship between said planetary member and said wobble ring being such that said planetary member rotates within said wobble ring to periodically reach positions therewithin whereby said wobble ring is caused to rise and fall and thus cause reciprocation of said plunger.

3,844,381

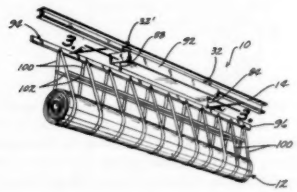
STORAGE SERVICING APPARATUS

Edmund J. Condon, Barnum, Iowa, assignor to Mac Press, Inc., Barnum, Iowa

Filed Dec. 17, 1973, Ser. No. 425,209

Int. Cl. B61b *3/02*; **B61d** *15/00*; **B65g** *1/06*

U.S. Cl. 186—29 **5 Claims**



1. An apparatus for storing and transporting athletic equipment comprising,

an overhead horizontally disposed support beam,

movable means mounted on said support beam,

first power means on said movable means for selectively longitudinally driving said movable means with respect to said support beam,

at least a pair of cable members extending downwardly from said movable means,

a sling means secured to the lower ends of said cable members for removably supporting athletic equipment therein at times,

and second power means on said movable means for selectively raising and lowering said cable members and said sling means.

3,844,382

MAST MOUNTED OVERHEAD GUARD

Clifford G. Mecklenburg, Homewood, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 23, 1973, Ser. No. 344,255

Int. Cl. B66f *9/10*

U.S. Cl. 187—9 **8 Claims**

1. In an electric lift truck the combination comprising:

a load carriage,

a lift mast mounted on the front end of said truck and mounting said load carriage for reciprocal vertical movement relative thereto,

an operator's station at the rear end of said truck,

a top opening battery compartment intermediate said mast and said operator's station,

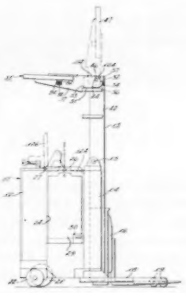
an overhead guard for the operator's station including

a guard grill, and

a pair of longitudinally extending cantilever arms supporting said grill and having front ends disposed on the laterally outer sides of said mast,

pivot means pivotally connecting said arms to the top of said mast on a transverse pivot axis for swinging movement from a normal horizontal position above said operator's station to an upright position above said mast in which position a battery may be lifted and removed from said battery compartment without interference with said guard, and

cooperable abutments on said mast and arms, respectively, operable on abutment to prevent downward swinging



movement of said arms below said horizontal position, said abutments permitting upward swinging movement of said arms and being disposed forwardly of said battery compartment and operator's station so as not to interfere with lifting and removal of said battery,

whereby the mounting of said guard on said mast allows the uppermost portion of said carriage to be elevated above said pivot means without interference with said overhead guard or said pivot means.

3,844,383

ELEVATOR SIGNALING SYSTEM

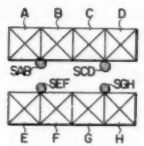
Tatsuo Iwasaka; Takeo Yuminaka, and Hideto Matsuzawa, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,257

Claims priority, application Japan, Oct. 27, 1972, 47-107185

Int. Cl. B66b *3/00*

U.S. Cl. 187—29 R **7 Claims**



1. An elevator signaling system for use in a building having a plurality of elevator cars arranged in parallel for serving a plurality of service floor landings, comprising means for selecting one group of the elevator cars which can respond to a hall call among a plurality of elevator car groups in response to origination of the hall call, and guiding means adapted to be actuated in response to the application of the output of said selecting means, said guiding means being disposed at each floor landing and provided for each elevator car group.

3,844,384
CLOSED LOOP TYPE DISC BRAKE

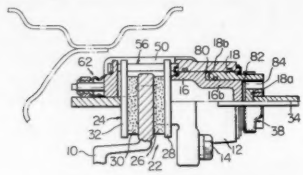
Shunichi Toshida, and Takashi Ozora, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Oct. 5, 1972, Ser. No. 295,116

Claims priority, application Japan, Oct. 20, 1971, 46-83172; Oct. 20, 1971, 46-83173

Int. Cl. F16d *55/228*

U.S. Cl. 188—72.5 **6 Claims**



1. A disc brake for a motor vehicle comprising, in combination, a rotatable braking disc, a stationary hydraulic cylinder having inner and outer pistons slidable in opposite directions which are substantially parallel to an axis of said braking disc, said pistons defining a fluid chamber between a cavity of said outer piston and a bottom wall of said inner piston into which pressurized fluid is supplied when a braking action is to be initiated, said outer piston having a bottom wall provided with a pair of extensions defining a recess therebetween, directly and indirectly actuated friction pad assemblies positioned adjacent to both faces of said braking disc, said directly actuated friction pad assembly being in abutting engagement with said inner piston and thereby forced against said braking disc when the inner piston is moved by said pressurized fluid, a yoke movable in a direction parallel to said axis of said braking disc and carrying the movement of said outer piston to said indirectly actuated friction pad assembly for forcing the indirectly actuated friction pad assembly against said braking disc when said outer piston is moved by said pressurized fluid, said yoke having a lengthwise side edge which is inserted in said recess of said outer piston and which bears against the bottom wall of said outer piston, an insert means interposed between said recess of the bottom wall of said outer piston and the side edge of said yoke, said insert means having a ring portion and a pair of radially extending bridge portions forming therebetween a spacing which receives said lengthwise side edge of said yoke, said bridge portions being disposed in said recess of said outer piston thereby allowing said lengthwise side edge of said yoke to bear against the bottom wall of said outer piston, and braking torque absorbing structure integrally formed with said hydraulic cylinder and including a pair of leg portions extending in parallel to said axis of the braking disc and a linking portion connected to said pair of leg portions at the free end thereof, said pair of leg portions having side edges respectively facing side edges of said friction pad assemblies, said pair of leg portions and said linking portion forming an opening to receive therein said friction pad assemblies, and said friction pad assemblies bearing at their side edges against one of said side edges of said leg portions for passing a braking torque on said friction pad assemblies to said braking torque absorbing structure when the assemblies are forced against said braking disc.

3,844,385
BRAKE MECHANISM FOR MOTOR VEHICLES

Laszlo Szekely, Budapest, Hungary, assignor to Autoipari Kutato Intezet, Budapest, Hungary

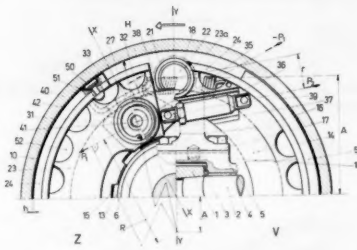
Filed May 11, 1973, Ser. No. 359,761

Claims priority, application Hungary, May 17, 1972, AU 274

Int. Cl. F16d *63/00*

U.S. Cl. 188—70 B **2 Claims**

1. A braking device for motor vehicles, comprising a rotatable brake drum having an inner active surface, said drum being fixed to a part to be braked, a separate brake disc fixed to said part to be braked, a pair of brake calipers pivotally mounted on anchoring means diagonally fixed on the opposite sides of a support member, a pair of brakeshoes each having a pair of spaced inwardly extending webs, said shoes being mounted on said anchoring means, brake pads carried by said brake calipers, brake actuating devices for urging said brake pads against said brake disc, adjusting members automatically operated by the relative motion of the said brakeshoes and brake pads and interconnected thereto, said adjusting members elongating when pulled and transmitting forces when pushed without changing in length, springs urging said brakeshoes to retracted position, and in the said composite braking



device tangential forces are transmitted to the said brakeshoes, arising from the friction generated on the active surfaces of the said brake pads when actuating the disc brake, the said forces driving the said shoes against the inner surface of the said brake drum, the brake pads and brakeshoes in one direction of rotation being in direct support against each other, while in the opposite direction of rotation due to the assistance by the automatic adjusting member it is a pressing association, said brake disc being positioned between the webs of the brakeshoes, the said brake pads together with their brake calipers being disposed in relation to the anchoring means of the brakeshoes operated by them, each on the opposite sides of a diagonal perpendicular to the straight line crossing the axes of the said anchoring means.

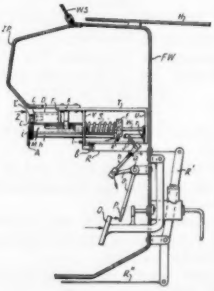
3,844,386
AUTOMATIC EMERGENCY BRAKING SYSTEM

Alonzo Bohannon, 105 Rhode Island Ave., Washington, D.C. 20001

Filed June 1, 1971, Ser. No. 148,586

Int. Cl. B60t *7/06*

U.S. Cl. 188—167 **1 Claim**



1. An emergency brake comprising a housing having a pair of spaced end plates, a jackshaft connected to one end plate

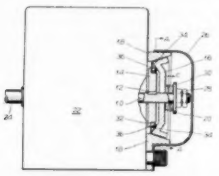
and extending through the other end plate, a belltube slidably mounted on the jackshaft, a spring biasing one end of the belltube in an actuating direction, a control handle having a rotatable cam gear connected to the other end of the belltube, a face plate having a cut-out portion, connected to the housing for holding the belltube in a retracted position against the force of the spring, a release gear mechanism connected between the cam gear and vehicle brake pedal for rotating the cam gear to release the cam gear through the cut-out portion on overtravel of the brake pedal, a cable connected between said one end of the belltube and the emergency brake for allowing the spring to force the belltube in the actuating direction to apply the emergency brake.

3,844,387

BRAKING DEVICE FOR A DRIVEN SHAFT

Hiroshi Morokoshi, Osaka, Japan, assignor to Yamaai Seisakusho Co., Ltd., Shimizu-cho, Sakai, Japan

Filed Mar. 19, 1973, Ser. No. 342,620
Int. Cl. B60t 7/12
U.S. Cl. 188—187 **3 Claims**



1. A braking device for a driven shaft comprising: a rotatable disc fixed to said driven shaft to rotate therewith; a brake disc journalled concentrically with and adjacent said rotatable disc so as to be movable both in the axial direction and about its axis, said brake disc having a cone-shaped outer surface tapering toward said rotatable disc; a brake block fixed in position adjacent said rotatable disc and around the outer periphery of said brake disc concentrically with said brake disc, said brake block having a cone-shaped inner surface tapering toward said rotatable disc, said inner surface of said brake block being engageable with said cone-shaped outer surface of said brake disc to restrain the free rotation of said brake disc about the axis when said brake disc engages with said rotatable disc; spring means mounted adjacent said brake disc for urging said brake disc into engagement with said rotatable disc and also with said brake block; and means located between said rotatable disc and brake disc for intermittent disengagement between said brake disc and said brake block against the force of said spring means, said means comprising a plurality of balls, and a plurality of spaces formed between opposed surfaces of said rotatable disc and said brake disc at regular intervals in the circumferential direction of said two discs for receiving said balls under the condition which said balls always engage with both discs, each of said ball receiving spaces having the depth gradually decreasing in a direction opposite to the direction of rotation of said rotatable disc.

3,844,388

AUTOMATIC BRAKE ADJUSTER AND RESET HAVING EXTENSIONABLE FEATURE

Richard J. Ditlinger, and Peter Brooks, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 26, 1973, Ser. No. 400,987
Int. Cl. F16d 65/54
U.S. Cl. 188—196 R **8 Claims**

1. Automatic brake adjusting apparatus for a multiple-disc disc brake having an axially movable fluid pressure actuated pressure plate for applying the brake comprising:

an annular housing provided with a plurality of circumferentially spaced-apart cavities each of which is arranged with its axis perpendicular to said pressure plate;

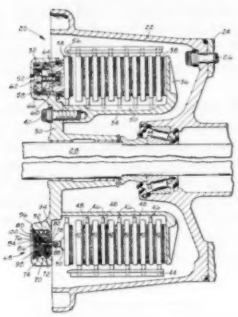
a first tubular member disposed in each of said cavities for axial movement therein;

first and second stop means in each of said cavities and engaged by said first tubular member to establish fixed brake released and brake energized positions, respectively, thereof;

a second tubular member disposed in each of said cavities for telescoping movement relative to said first tubular member;

a rod member fixedly secured at one end to said pressure plate and extending therefrom into said second tubular member;

a radially extending flange on the free end of said rod member;



a first axially crushable tubular member interposed between said second tubular member and said flange;

a second axially crushable tubular member interposed between said first and second tubular members;

said first and second tubular members being actuated by said pressure plate in response to pressurization of the latter;

said first tubular member engaging said second stop means whereupon further movement of said pressure plate in a brake applying direction occurs as a result of progressive axial crushing of said first and second crushable members to the extent required to compensate for wear of the frictional surfaces of said multiple disc brake;

said second crushable member being crushed axially thereby permitting said second tubular member to telescope axially relative to said first tubular member to extend the range of adjustment of said pressure plate beyond that provided by said first crushable member.

3,844,389

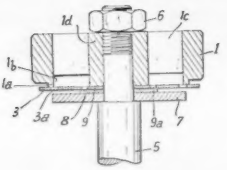
PISTONS FOR HYDRAULIC SHOCK ABSORBERS

Christian Bourcier de Carbon, 64 Blvd. Maurice-Barres, Neuilly-sur-Seine, France

Filed July 17, 1972, Ser. No. 272,215
Claims priority, application France, July 21, 1971, 71.26651
Int. Cl. F16f 9/34
U.S. Cl. 188—322 **1 Claim**

1. Improvement in piston construction for hydraulic shock absorbers, especially of the single tube type: said construction comprising a piston body carried by the shouldered end of a piston rod, said piston body including a central sleeve forming the hub portion of said piston body, surrounding the rod, and clamped between the rod shoulder and the usual end nut arrangement; and an outer annular portion between which and said sleeve are the usual free flow passages through the piston body; a flat annular bearing washer clamped between

the piston body and the rod shoulder; a floating double-acting valve in the form of at least one flat annular disk; the outer portion of said valve adapted to bear against a circular bearing edge on said outer annular portion of the piston body and the inner portion of the valve adapted to bear upon the outer portion of said flat bearing washer; a flat centering washer clamped between said piston sleeve and said bearing washer and being of lesser diameter than said bearing washer and of a thickness of the approximate order of that of the valve disk, there being practically zero clearance between the centering



washer and the floating valve, whereby without additional provision fluid could not pass when the valve and centering disks are in alignment; and notches provided in the outer periphery of the centering washer so as to constitute passages whose section is rigorously in proportion to the lift of the valve in its central part; the outer diameter of the centering washer and thus the inner diameter of valve being greater than the diameter of said piston sleeve; said central sleeve being joined to said outer annular portion by flat relatively narrow radial partitions.

3,844,390

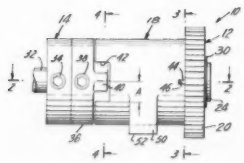
SINGLE SPRING, BIDIRECTIONAL, ANTI-OVERTRAVEL CLUTCH

Robert D. Lowery, Willowick, Ohio, assignor to The Marquette Metal Products Company, Cleveland, Ohio

Filed June 6, 1973, Ser. No. 367,394

Int. Cl. F16d *13/08*

U.S. Cl. 192—26 **12 Claims**



1. A bidirectional spring clutch comprising:

a. an input and an output drum supported for rotation in coaxial relationship to each other;

b. a coil spring disposed to surround said input and output drums and having a plural step set of coils;

c. one set of coils being preloaded so as to be in interference fit with the input drum;

d. a sleeve surrounding the coil spring and being connected to the end portion of said coil spring adjacent the one set of coils and the input drum;

e. said coil spring being connected to said sleeve so that, upon rotation of the input drum in one direction and arresting rotation of said sleeve, the one set of coils disengages from the input drum; and

f. connecting means rotatively connecting said sleeve to said output drum so that when there is rotation of the input drum in a direction opposite said one direction the output load from the output drum is transmitted through the connection between the sleeve and coil spring at the input drum to thereby exert a force on said one set of coils in said one direction and prevent an interruption of said interference fit of said one set of coils with the input drum so that transmission of rotation is effected from the input drum via said one set of coils of the coil spring and said sleeve to the output drum in a direction opposite said one direction;

g. said connecting means functioning upon overtravel of said output drum relative to said input drum to cause another set of coils of the coil spring to contract and grip said input and output drums and thereby terminate said overtravel.

3,844,391

SPRAG TYPE FREEWHEEL CLUTCH

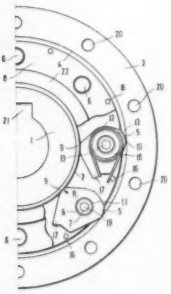
Karl J. Hallerberg, Plantkstadt, Germany, assignor to Borg-Warner-Stieber GmbH, Heidelberg, Germany

Filed Mar. 16, 1973, Ser. No. 342,009

Claims priority, application Germany, Mar. 27, 1972, 2214804

Int. Cl. F16d *41/07, 43/06*

U.S. Cl. 192—41 A **10 Claims**



1. A freewheeling clutch having a plurality of sprags between an outer cylindrical clamping surface of an inner race and an inner cylindrical clamping surface of a concentric outer race, said sprags being subject to turning in an engaging direction by spring force and subject to turning in a disengaging direction under the effect of centrifugal force, characterized in that each of said sprags includes a bore extending parallel to a clamping surface, each of said sprags being retained between a pair of laterally spaced cage plates by means of a pin extending through said bore and supported at respective ends thereof in said cage plates, each of said pins being formed with a clearance selected for permitting limited radial outward movement of said sprag with respect to said cage plates, said cage plates being frictionally coupled to said inner race, each sprag being movable radially and rotatable out of engagement with both said inner and outer clamping surfaces under the influence of centrifugal force in response to rotation of said inner race above a predetermined speed of rotation.

3,844,392

ONE-WAY CLUTCH ARRANGEMENT

Reinhold Stroezel, Im Waeldle, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 1, 1972, Ser. No. 302,750

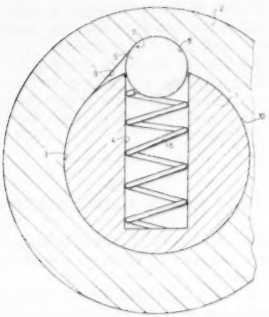
Claims priority, application Germany, Nov. 2, 1971, 2154335

Int. Cl. F16d *15/00*

U.S. Cl. 192—45 **3 Claims**

1. A one-way free wheeling clutch arrangement comprising an inner clutch part and an outer clutch part surrounding said

inner clutch part, said inner clutch part having an outer cylindrical surface and said outer clutch part having an inner cylindrical surface in sliding contact with said outer cylindrical surface so that said clutch parts are rotatable relative to each other about an axis, said inner clutch part being provided with a single radial bore extending from said outer cylindrical surface thereof thereinto and having a closed end, and said outer clutch part having a wedge-shaped recess extending from said inner cylindrical surface thereinto, said recess including a steep face portion and a sloping face portion tangential to said inner cylindrical surface and forming a tapered space between said inner and outer surfaces; a spherical coupling element located at least in part in said radial bore; and spring means in said bore and abutting with one end thereof said spherical coupling element and with the other end said closed end of said bore for biasing said coupling element in radial direction into said recess so that during rotation of at least one of said clutch parts in one direction of rotation, said coupling element engages said steep face portion whereby said clutch parts are coupled for rotation in said one direction, and so that during rotation of any one of said clutch parts in the opposite direction, said coupling element is pressed by said sloping face portion into said bore so that said clutch parts can freely rotate relative to each other.



3,844,393

ACTUATING MECHANISM FOR ENGAGEABLE DEVICES IN PLANETARY GEAR TRANSMISSIONS

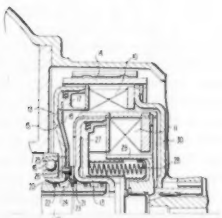
Wolfgang Zaiser, Althutte, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Sept. 8, 1972, Ser. No. 287,217

Claims priority, application Germany, Sept. 9, 1971, 2145106

Int. Cl. F16d *25/00*

U.S. Cl. 192—87.11 **13 Claims**



1. An actuating mechanism for a change-speed transmission arrangement, comprising: a housing, two concentrically disposed frictional engaging means provided in said housing, an actuating piston means operatively connected with each of said frictional engaging means, each of said actuating piston means being located on the same side of said two frictional engaging means, a support flange means disposed in said housing for rotatably supporting at least one of said two frictional engaging means, a spring disk means non-rotatably connected at its outer circumference with the actuating piston operatively connected with said radially outwardly disposed fricitonal engaging means for returning said radially outwardly disposed frictional engaging means to a disengaged position, said spring disk means simultaneously forming a boundary of a pressure space for receiving a pressure medium to selectively cause engagement of said radially outwardly disposed frictional engaging means, and additional spring means operatively connected with the other fricitonal engaging means for returning the same to a disengaged position.

3,844,394

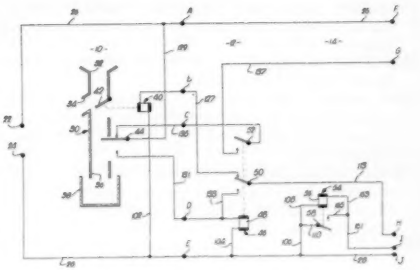
CONTROL MEANS INCLUDING DISABLED SELECTION LOCK-OUT FOR VENDING MACHINE

Lloyd R. Hale, Independence, and John W. Baxendale, Kansas City, both of Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Sept. 13, 1973, Ser. No. 396,808

Int. Cl. G07f *5/18*

U.S. Cl. 194—10 **13 Claims**



1. In a vending machine normally adapted for selectively dispensing any of a plurality of different types of products:

separate, electrically actuatable means for dispensing each of said types of products,

each of said dispensing means normally being functional to operate through a normal dispensing cycle thereof having a predetermined period of time duration for dispensing a single product of the corresponding type whenever said dispensing means is electrically energized for at least said period of time, said dispensing means being subject to the possible occurrence of a fault condition in which a dispensing means becomes jammed in manner preventing completion of a normal dispensing cycle despite continued electrical energization thereof;

electrical means for selectively energizing said dispensing means individually, including first switching means for each dispensing means responsive to operation of the latter for normally interrupting energization of the corresponding dispensing means upon completion of a normal dispensing cycle thereof, said first switching means being subject to the possible occurrence of a fault condition in which a first switching means malfunctions and fails to interrupt energization of the corresponding dispensing means upon completion of a normal dispensing cycle of the latter;

electrically responsive, time delayed means, including timing means coupled with said electrical means for initiation of operation of said timing means upon the energiza-

tion of any of said dispensing means, said timing means being operable to actuate said second switching means in manner such that said interval is related to the length of said period of a normal dispensing cycle to limit jackpotting involving uncontrolled repetitive dispensing of products by any dispensing means that has suffered said switching malfunction type of fault condition;

second switching means for each dispensing means coupled with said electrical means and operably coupled with said timing means for actuation by the latter a predetermined interval of time after initiation of operation of said timing means for interrupting energization of any dispensing means that has suffered said jamming type fault condition prior to completion of an attempted normal dispensing cycle thereof, whereby possible damage from continued energization of a jammed dispensing means is prevented;

separate means for sensing the depletion of each product type;

means operably coupling each sensing means with a corresponding second switching means for actuating the latter upon sensing of a product depletion condition;

means for releasably latching each of said second switching means in its actuated condition upon any actuation thereof, whereby the dispensing means for any product type that has suffered a fault condition is deactivated against further attempted operation thereof until said latching means has been released by personnel responsible for first remedying said fault condition;

means for receiving, sensing and registering the establishment of credit appropriate for the dispensing of a product operably coupled with said electrical means for rendering the latter inoperative until said credit has been established;

electrically responsive means for preventing said credit means from receiving credit;

third switching means for each product type which are operated to an actuated condition thereof whenever the corresponding second switching means is in its actuated condition; and

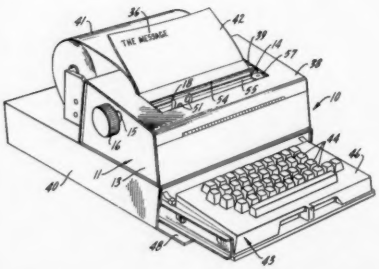
means coupling said third switch means with said preventing means to operate the latter to refuse receipt of credit only when all of said third switching means are in their actuated conditions.

3,844,395

TEXT DISPLAY CONTROL FOR DATA PRINTER

Peter G. S. Mero, Winnetka, and George W. Volling, Round Lake Beach, both of Ill., assignors to Extel Corporation, Northbrook, Ill.

Filed Sept. 12, 1973, Ser. No. 396,393
Int. Cl. B41j *3/44*
U.S. Cl. 197—1 R **12 Claims**



1. In a data printer for printing a data symbol text on a record sheet in response to an input signal including a sequence of code words representative of symbols to be printed and of non-print functions for the printer, of the kind comprising a data store for recording the input signal and a printing mechanism responsive to data recorded in the data store for recording symbols on a record sheet, a text display control comprising:

record sheet shift means for shifting the record sheet between a printing position in which some component of the printer masks a terminal portion of the printed text on the record sheet and a text display position in which the terminal portion of the text is visible;

display detector means, coupled to the data store, for developing a display signal indicative of the absence of a code word in an output level of the data store;

print reset detector means, coupled to the data store and to the display detector means, for developing a print reset signal indicative of the recording of a code word in an output level of the data store after the record sheet has been shifted to its text display position;

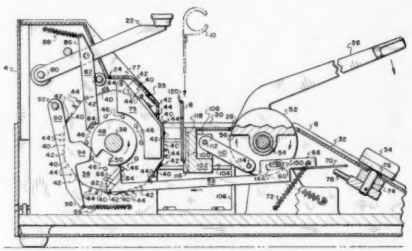
and coupling means for effectively applying the display and print reset signals to the record sheet shift means to actuate the record sheet shift means to shift the record sheet to its text display position and to return the record sheet to its printing position.

3,844,396

PRINTING UPON AND ENCODING IDENTIFICATION DEVICES

William P. Davis, Salt Lake City, and Billy M. Jensen, Sandy, both of Utah, assignors to Bio-Logics Products Inc., Salt Lake City, Utah

Continuation of Ser. No. 222,801, Feb. 2, 1972, abandoned.
This application Sept. 28, 1973, Ser. No. 401,662
Int. Cl. B41j *3/50*
U.S. Cl. 197—1.5 **8 Claims**



1. Apparatus for encoding an identification device, said apparatus comprising:

a plurality of wheels,

encoding means carried at spaced locations on the edge surface of said wheels for encoding an identification device,

an impressing head,

retaining means for releasably retaining an identification device on said impressing head,

actuating means for relatively moving said impressing head into and out of a position in respect to said wheels wherein said encoding means will impress indicia in the identification device carried by said retaining means,

advancing means operable by said actuating means for sequentially advancing at least some of said wheels,

disabling means for selectively disabling said advancing means whereby indicia at one location on the wheel will be repeatedly impressed on the identification device upon repeated operation of said actuating means,

manually operable means for advancing said wheels independently of said advancing means, and

means preventing free rotation of said wheels while permitting said wheels to be sequentially advanced by either said advancing means operable by said actuating means or by

said manually operable means for sequentially advancing said wheels.

3,844,397

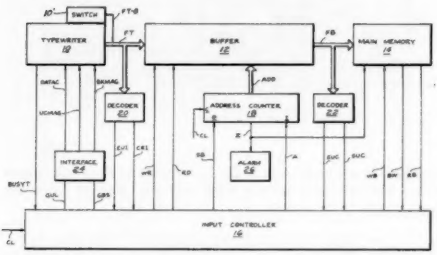
AUTOMATIC UNDERLINING IN AN AUTOMATED TYPEWRITER SYSTEM

Edward M. Richards, Commack, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.

Continuation of Ser. No. 201,306, Nov. 23, 1971, abandoned. This application May 21, 1973, Ser. No. 362,382

Int. Cl. B41j *5/30*

U.S. Cl. 197—19 **5 Claims**



1. For use with a typewriter which generates a particular coded combination of signals for each key which is stroked to perform a printing or other operation and which can perform said operations upon receipt of said particular coded combinations of signals, the method of automatically underlining a typed word comprising the steps generating a first given coded combination of signals representing a start underline control byte, storing said start underline control byte, sequentially stroking the keys of the typewriter associated with the word to be underlined, sequentially storing the coded combinations of signals generated by the keystrokings, generating a second given coded combination of signals representing an end underline control byte, storing said end underline control byte, after the storage of said second given coded combinations of signals, generating, in response to the stored coded combination of signals, signals for causing said typewriter to backspace one position for each of the stored coded combinations of signals bracketed between said first and second given coded combinations of signals, generating an alarm whenever the number of signals for causing backspacing exceeds a number related to the number of keystrokes performed between the generation of the first and second given coded combinations of signals, and, if no alarm is generated, then generating, in response to the stored coded combinations of signals, signals for causing said typewriter to print one underline symbol for each of the stored coded combinations of signals bracketed between said first and second given coded combinations of signals.

3,844,398

SELF-CENTERING DUAL BELT CONVEYOR

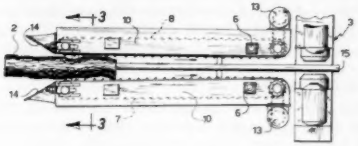
Gaston Pinat, 5384 Jules Fournier St., Montreal North, Province of Quebec, Canada

Filed Jan. 15, 1973, Ser. No. 323,825

Int. Cl. B27b *31/00*

U.S. Cl. 198—165 **7 Claims**

1. A self-centering dual belt feeding conveyor for feeding logs and cants to a wood processing machine in a straight feeding path, comprising an elongated frame extending along said path, a substantially horizontal straight support rail mounted on said frame to support a log or cant in said path, a pair of transversely aligned conveyors mounted on each side of said path with an inner run facing each other and power driven in the same direction for receiving between said inner runs, logs or cants of different diameters and different tapers to be guided and fed to a wood processing machine by said inner runs, each conveyor including an endless conveyor belt means and roller elements longitudinally spaced along said path and on which the ends of the conveyor belt means are trained, said roller elements forming a transverse pair at each end of the respective conveyor belt means, the roller elements of each pair being substantially transversely aligned and mounted on said frame for movement towards and away from each other transversely of said path, whereby to increase or



decrease the gap between said conveyor belt means, centering means to positively maintain the two roller elements of each pair at an equal transverse distance from a vertical plane passing through the longitudinal axis of said support rail independently of the width of said gap, means biasing said roller elements of each pair in a direction to decrease said gap and means to resiliently allow unequal gap width between the two pairs of roller elements, whereby a log or cant inserted within said gap is positively centered in said path independently of its diameter, while said conveyor belts can take diverging or converging positions to engage logs or cants of variable taper.

3,844,399

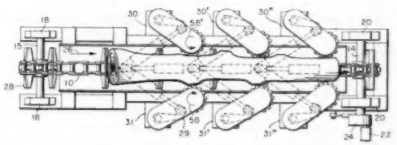
LOG CONVEYING APPARATUS

H. Charles Sellers, Jr., and Ronnie J. Hatchel, both of Birmingham, Ala., assignors to Beloit-Passavant Corporation, Birmingham, Ala.

Filed Mar. 9, 1973, Ser. No. 339,617

Int. Cl. B27b *31/00*

U.S. Cl. 198—165 **8 Claims**



1. Apparatus for conveying logs, especially logs having irregular surface contours and protrusions, such as branch nubs, while maintaining the log in a centered position comprising:

a frame member;

conveyance means on said frame member for transporting logs along a centered path thereon;

log centering means aligned on said frame member on either side of the conveyance means, said centering means comprising an articulated arm means positioned on either side of the conveyance means with each said centering means being movable laterally and independently of the other, each arm means having a first end adapted to engage substantially opposite sides of logs passing therebetween, and a second end linked to the corresponding second end of the other arm means;

positioning means to move said linked second ends of the arm means axially of the log to thereby position the first ends of both arm means against the log to guide the log on the centered path;

resilient means mounted on each of the articulated arm means urging the log engaging ends of the arm means against the log while tracking over the surface irregularities to maintain the log on a centered path;

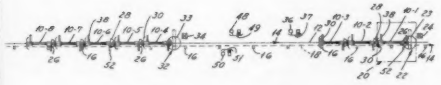
the log engaging ends of said arm means are each movable independently of their linked ends.

3,844,400

CONTROL SYSTEM FOR ACCUMULATING CONVEYORS

Clarence A. Dehne, Farmington, Mich., assignor to Jervis B. Webb Company, Detroit, Mich.

Filed Aug. 17, 1972, Ser. No. 281,523
Int. Cl. B65g *43/00*
U.S. Cl. 198—40 **7 Claims**



1. A control system for a conveyor having a plurality of carriers movable in a forward direction along a support by engagement between a driving member on each carrier and one of a plurality of pushers connected to a propelling member, the driving member of each carrier being disengageable from the pushers by a stop which arrests forward movement of the carrier and being disengageable from the pushers for the accumulation of carriers in response to engagement between the carrier and a preceding stopped carrier; wherein the improvement comprises:

a primary carrier stop movable between closed and open positions to release carriers sequentially;

a carrier feeder stop installed along the carrier support in advance of the primary stop and movable between closed and open positions, the feeder stop in the closed position being capable of causing the disengagement of the driving member of a carrier from a pusher and of arresting forward movement of the carrier to initiate the accumulation of a bank of following carriers; and,

control means for opening the feeder stop in response to the absence of a carrier between the feeder stop and a control location spaced from the feeder stop toward the primary stop in the forward direction of carrier movement a distance not less than the length of a group of (n) carriers when accumulated, and for closing the feeder stop in response to the passage of the group of (n) carriers through the feeder stop.

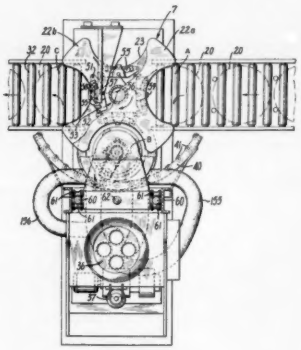
3,844,401

CONVEYOR WITH MAGNETIC ARTICLE HOLDING MEANS

Albert F. Gerlovich, Fanwood, N.J., assignor to Rheem Manufacturing Company, New York, N.Y.

Division of Ser. No. 126,201, March 19, 1971, Pat. No. 3,741,149. This application Jan. 15, 1973, Ser. No. 323,505
Int. Cl. B65g *17/46*
U.S. Cl. 198—41 **5 Claims**

1. In an article conveyor machine, a movably mounted conveyor, a source of power connected to drive said conveyor, said conveyor having an opening adapted to receive therein a metal body, an arm pivoted on the conveyor, a magnet carried by said arm, a spring connected to urge the magnet toward the body to restrain the body within said opening, and means for releasing the body at an advanced position comprising a stationary cam, and a part on said pivoted arm



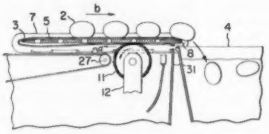
engageable with said cam in the movement of the conveyor to swing the arm and retract positively the magnet from the body.

3,844,402

BAKERY FLEXIBLE BELT CARRYING PLATE

Torahiko Hayashi, 2-3, Nozawa-cho, Utsunomiya-shi, Japan

Filed Dec. 29, 1971, Ser. No. 213,277
Claims priority, application Japan, Jan. 14, 1971, 46-1172
Int. Cl. B65g *37/00*
U.S. Cl. 198—99 **5 Claims**



1. A device for automatically conveying and transferring at a transfer position semi-manufactured dough products such as bread and doughnuts to a subsequent process stage such as a fryer or a band oven, comprising a carrying plate assembly having a core plate, support means supporting said core plate, an endless flexible belt made of material provided with evenly distributed laterally extending ridges on its exterior surface in contact with said dough products positioned around said core plate, a roller having projections around it, means for bringing the roller into or out of meshing relationship with the lower exterior surface of the belt at the transfer position where the dough products are transferred, and means for rotating the roller in the backward direction relative to the direction in which the dough products are to be transferred so as to rotate the belt around the core plate for transferring the dough products, comprising further a swingable conveyor for conveying said carrying plate assembly to said transfer station for transferring said dough products, said conveyor having a belt wound around two rollers positioned at the foremost and rearmost ends thereof, swingable around said foremost roller between a horizontal position and an inclined position, with said rearmost roller at a level below said foremost roller and coming into contact with driving means, which is adapted to reverse the direction of rotation of said conveyor belt.

3,844,403
POINTS SYSTEM CONVEYOR

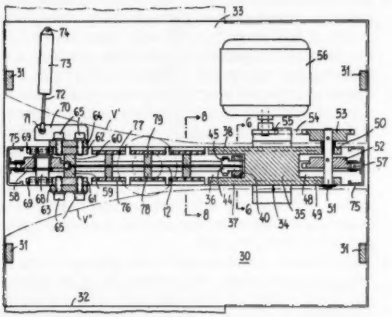
Hans-Ulrich Stauber, Grut, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Nov. 5, 1973, Ser. No. 413,169

Claims priority, application Switzerland, Nov. 11, 1972, 16476/72

Int. Cl. B65g *41/00*

U.S. Cl. 198—109 **10 Claims**



1. A conveyor comprising a cantilever outrigger supported at one end and resiliently flexible in one plane while being inflexible and substantially immovable in two other planes perpendicular to said one plane, a flexible guide extending along the outrigger in said one plane, return devices at opposite ends of the conveyor, an endless deformable stringer looped around the return devices and having one run constrained by the guide to follow the contour of the outrigger in said one plane, a mechanism connected to drive the stringer, and an actuator operable to displace the unsupported end of the outrigger laterally in said one plane to any one of different predetermined positions by resiliently flexing the outrigger whereby said one run of the conveyor is deformable along a curved path to bring its end into alignment with a selected one of branch paths which extend away from said predetermined positions respectively.

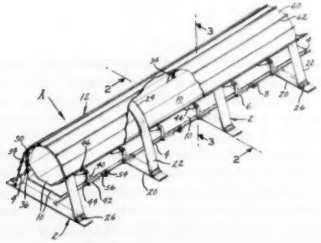
3,844,404
COVERED OVERLAND CONVEYOR

Russell E. Emmenegger, Sappington, Mo., assignor to Conveyor Covers Incorporated, St. Louis, Mo.

Filed Aug. 16, 1972, Ser. No. 281,102

Int. Cl. B65g *15/60*

U.S. Cl. 198—204 **2 Claims**



1. A conveyor for transporting materials overland, said conveyor comprising: a succession of arch-like supports arranged such that the openings of succeeding arches in the supports align, each arch-like support including a base which extends the entire width of the support and rests on a supporting surface, spaced apart legs secured to the base at their lower ends and projecting upwardly therefrom, and a connecting portion connected rigidly to and extending between the upper ends of the legs to form a firm supporting structure between the legs, the legs of each arch-like support being inclined relative to each other and to the base such that they diverge away from the connecting portion and the connecting portion being curved such that the convex surface thereof is presented upwardly; a pair of cables extending through the arch-like supports above the bases and adjacent to the legs thereof; suspension means suspending the cables from the arch-like supports and being adjustable to vary the height of the cables above the base of the supports; first idler assemblies carried by the cables below the connecting portions of the arch-like supports, the idler assemblies spanning the space between the cables and having rollers thereon; second idler assemblies carried by the cables and also spanning the space between the cables, the second idler assemblies having rollers located below the rollers of the first idler assemblies; an endless belt extended through the arch-like supports above the base thereof and having an upper pass supported on the rollers of the first idler assemblies and a lower pass supported on the rollers of the lower idler assemblies; and a cover secured to and supported by the connecting portions of the arch-like supports, the cover being exposed outwardly to the atmosphere and being positioned to prevent material from being blown off of the upper pass of the belt, the cover extending over substantially all of the curved portions on the arch-like supports and downwardly along the legs at one side of the conveyor to a position below the upper pass of the belt, the other side of the cover terminating above the upper pass of the belt to permit visual inspection of material carried on the belt.

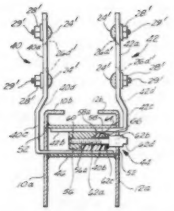
3,844,405
QUICK ADJUSTING GUIDE RAIL FOR CONVEYOR

Lloyd N. Shuford, Lynchburg, Va., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Filed Sept. 1, 1972, Ser. No. 285,671

Int. Cl. B65g *15/60*

U.S. Cl. 198—204 **14 Claims**



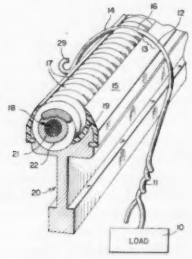
1. In a conveyor apparatus for conveying articles having a movable conveyor means, a conveyor support adapted to mount said movable conveyor means and a pair of guide rails for maintaining the conveyed articles properly positioned on the movable conveying means, means for mounting said guide rails for lateral adjustment perpendicular to the direction of movement of said conveyor means comprising a pair of guide rail mounting members each having a base portion extending generally laterally substantially parallel to one another, a generally vertically extending upstanding portion adapted to mount said guide rail and a connecting portion operatively connecting said upstanding portion to said base portion, said conveyor support being provided with recesses below said conveyor means and at opposite sides thereof, said recesses being adapted to receive the substantially parallel base portions of said guide rail mounting members respectively, said base portions being movable in a generally lateral direction into and out of said recesses between inner and outer positions, said connecting portions in the inner position of said guide rail mounting member extending upwardly above said conveyor means and inwardly thereover, thereby to position said upstanding portions inwardly of the outer edges of said conveyor means, and adjustable locking means to lock said

base portions of said guide rail mounting members to said conveyor support in any position between said inner and outer positions.

3,844,406
ROTATING CABLE CONVEYOR

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylah Corporation, Hamilton, Ohio

Filed Nov. 17, 1972, Ser. No. 307,423
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **7 Claims**

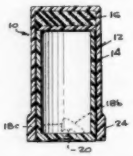


1. A screw type conveyor, comprising; an elongated rigid support having an upper portion; an elongated bearing material strip generally coextensive with and overlying the upper portion of said support; said strip having an outwardly opening channel defined by a surface that is a substantial portion of a circle, in cross section perpendicular to the drive shaft axis of rotation, which extends for substantially more than 180° and further by opposed channel legs each of said legs having an outwardly facing exposed support surface immediately adjacent said channel; said outwardly facing support surface constituting means for supporting the weight of articles being conveyed; and rotatable means for threadably and drivingly engaging a load drive member, including an elongated flexible drive shaft having helical thread means on its outer surface and being received within said channel; and said drive shaft being circular and having an outer diameter substantially the same as the inner diameter of said arcuate channel surface, and being thus overlapped by the channel legs to positively interfere with movement of the shaft out of the channel in a direction perpendicular to its axis of rotation.

3,844,407
CHILD RESISTANT SAFETY CONTAINER

Robert E. Buie, Salt Lake City, Utah, assignor to Child-Resistant Packaging Corp., Washington, D.C.

Filed Jan. 11, 1973, Ser. No. 322,790
Int. Cl. A45c *13/10, 13/18*
U.S. Cl. 206—1.5 **12 Claims**

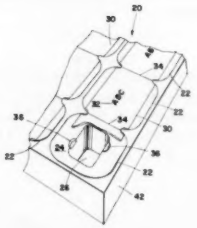


1. A safety type container for medicines and the like having child resistant closure means, comprising in combination:
   a. an outer cylindrical container member having a longitudinal axis, a closed end and an open end transverse to said axis;
   b. an inner cylindrical container member also having a corresponding longitudinal axis, a closed end and an open end, and being sized to closely telescopically fit both axially and rotatively within said outer container;
   c. said container members adapted to fit together with their closed ends remotely opposite one another to form a completely closed container, and so that in closed assembly the closed end of the inner member is essentially flush with and does not project beyond the open end of said outer member;
   d. said container members having resiliently biased complementally coacting interengaging locking means, including a pair of lugs spaced peripherally apart on one of said members and projecting radially from said axis, a corresponding pair of specially inclined bayonet type slotways spaced peripherally apart on the other of said members to operatively receive said lugs therein; said slotways having major linear portions and an open end constituting basic initial entry portions, each of said major linear portions disposed at a pronounced inclined angle relative to a line parallel to the longitudinal axis, said slotways further having lug-retaining seats offset therefrom and at an acute angle relative thereto and being oriented generally parallel to said axis; and
   e. said container members and interengaging locking means being so constructed and related so as to effect both automatic and positive but releasable interlocking thereof responsive to the application and subsequent release of moderate axially applied pressure to the opposite closed ends of said container members.

3,844,408
PARTIALLY NESTABLE PHARMACEUTICAL CONTAINERS

Kenneth D. Relyea, Grove City, Ohio, assignor to Drustar Unit Dose Systems, Inc., Grove City, Ohio

Filed Mar. 29, 1972, Ser. No. 239,278
Int. Cl. B65d *83/04*
U.S. Cl. 206—534 **1 Claim**

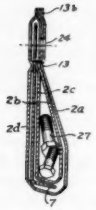


1. A container means for perdetermined unit dosages of pharmaceutical materials adapted to be received in a loading tray means provided with spaced container receiving openings disposed on the upward facing surface of the tray comprising, in combination, a plurality of open-mouth containers, each provided with a surrounding integrally formed lip portion removably connected to the lip portion of the next adjacent container, each of said lip portions being provided with an upwardly facing recess having a substantially semi-circular configuration formed integrally with the opposing upper edge portions of the mouth of said container, said recesses forming protrusions of complementary shape on the underside of the lip portions which are adapted to be resiliently seated within a recess of a like container disposed in nested relationship below; and a flat elongate strip of material removably disposed over each of said containers and carrying indicia identifying the contents of each container, said elongate strip including breakaway connections disposed between each container.

3,844,409
TWO COMPARTMENT UNITARY BAG HAVING SHELF

William A. Bodolay, 15 Fern Glen Rd., Longmeadow, Mass. 01106, and Stephen M. Bodolay, 1307 Glen Green Ln., Lakeland, Fla. 39199

Filed Nov. 27, 1972, Ser. No. 309,661
Int. Cl. B65d *31/12, 33/02, 33/14, 85/54*
U.S. Cl. 206—45.34 7 Claims

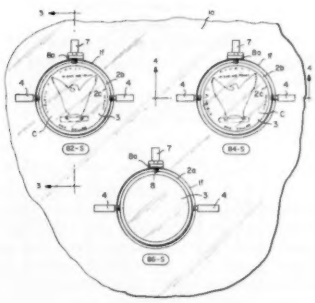


1. A two compartment unitary package for heavy items comprising a rear compartment and a front compartment, two layers of a transparent material covering the outside of the front compartment consisting of an inside and outside layer and a single layer of said transparent material covering the face of the rear compartment, a flat and straight stiffener indicia member located in said rear compartment behind said front compartment, and having a fold at the bottom thereof for supporting the inside layer of the transparent material.

3,844,410
MOUNTING OF COINS IN THE PAGES OF COIN ALBUMS

Luther N. Cook, 26 N. Washington St., Tiffin, Ohio 44883

Filed Apr. 30, 1973, Ser. No. 355,446
Int. Cl. B65d *5/50;* A45c *11/00*
U.S. Cl. 206—.83 10 Claims

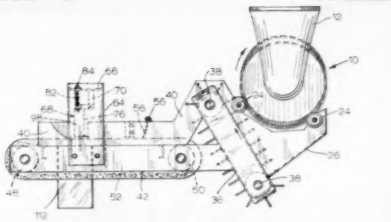


1. In combination, a coin album page comprising a pair of superimposed sheets of plastic material secured together, said sheets having a plurality of registering spaced circular holes extending therethrough; a plurality of circular transparent plastic coin holders adapted to hold coins therein disposed in at least some of the holes; said coin holders being of less diameter than the said holes; means for pivotally and removably mounting the coin holders in said holes respectively; and releaseable means for normally locking the coin holders in the plane of one face of the page, whereby when the releaseable means is released the coin holders may be rotated on their pivots to bring the reverse side of the coin holder into the plane of the same face of the album page.

3,844,411
OBJECT SEGREGATING MECHANISM

Michael Lewis, R.D. No. 2, Felton, Pa.

Continuation-in-part of Ser. No. 291,731, Sept. 25, 1972, abandoned. This application May 15, 1973, Ser. No. 360,522
Int. Cl. B07c
U.S. Cl. 209—73 31 Claims



1. Mechanism to segregate relatively smooth-surfaced sphere-like objects from relatively rough-surfaced sphere-like objects comprising in combination, means arranged to receive a heterogeneous mixture of relatively smooth-surfaced and rough-surfaced sphere-like objects and move the same by rolling along a predetermined path, detecting means mounted adjacent said path and positioned relative to said path at a location to be engaged by said objects as they roll along said path, said detecting means being reactive to the surfaces of said objects and adapted to be moved from said path when engaged by rough-surfaced objects but remain in position relative to said path when smooth-surfaced objects encounter said detecting means, thereby being operable to segregate relatively rough-surfaced objects from relatively smooth-surfaced objects, and means to move said objects along said path.

3,844,412
DEPRESSING REAGENT FOR MINERAL FLOTATION AND METHOD FOR ITS EMPLOYMENT

Dominique Robert, 44, Boulevard della Liberation, 94-Vincennes, France

Continuation of Ser. No. 49,956, June 25, 1970, abandoned. This application Nov. 22, 1972, Ser. No. 308,874
Claims priority, application France, June 25, 1970, 69.21317
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 9 Claims

1. In a mineral flotation method in which a valuable mineral is separated from a gangue of sterile matter containing carbonates, or sulfates of alkaline earth metals or phyllosilicates, or quartz slimes in the form of a treated pulp by means of a collector selected from the group consisting of anionic and nonionic collectors, the improvement which comprises adding to the treated pulp as a depressing reagent an unpurified algae powder selected from the group consisting of a natural alginate, alginic acid solubilized by the addition of an alkali which solubilizes said alginic acid in the form of the salt of the alkaline ion, an algae powder containing alginic acid incorporated in a solution containing an alkaline ion, and a polymer produced artificially from d-mannuronic acid whereby said algae powder is added either to depress the sterile matter which is difficult to depress, or to depress the valuable minerals and to collect a foam containing the sterile matter to be rejected.

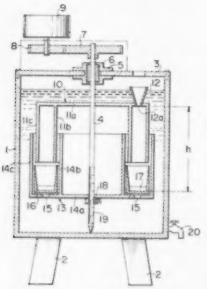
3,844,413
PARTICLE SIZE DISTRIBUTION ANALYSER

Takeo Mizushima, Tokyo, Japan, assignor to Tokyo Research Service Kabushiki Kaisha, Tokyo, Japan

Filed June 4, 1973, Ser. No. 366,688
Claims priority, application Japan, July 26, 1972, 47-74765
Int. Cl. B03d *3/00*
U.S. Cl. 209—209 3 Claims

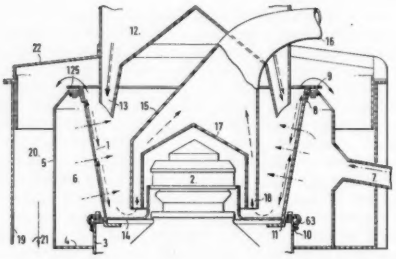
1. A device for sorting and classifying very small particles comprising:

a. a transparent water vessel,
b. a top sealing cover,
c. a shaft perpendicularly passing through said cover and rotatably carried by said cover,
d. an horological mechanism to rotatably drive said shaft,
e. a first inverted cup member having two concentric side walls and fixed to said shaft to be co-rotatable therewith,
f. second cup member having two concentric side walls



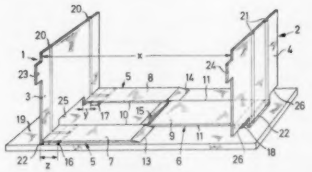
adapted to receive said two concentric side walls of said first cup member, said second cup member being carried by said shaft and including means for adjusting its position along said shaft, and
g. an annular dish mounted in said second cup member in an annular spaced defined by the two concentric side walls thereof, said first cup member having a sample inlet port opening to said annular space.

3,844,414
ROTATING STRATIFIER
Fred Jordison, Chesterfield, England, assignor to Birtley Engineering Limited, Darlinshire, England
Filed Apr. 17, 1972, Ser. No. 244,759
Claims priority, application Great Britain, Apr. 20, 1971, 10125/71
Int. Cl. B07b *4/08*
U.S. Cl. 209—467 **21 Claims**



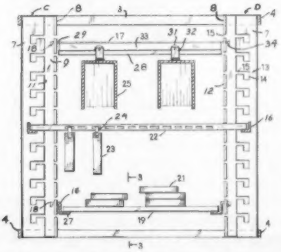
1. An apparatus for the separation of a mixture of particulate materials of different densities comprising means defining an air-permeable frusto-conical surface having a substantially vertical axis, means for feeding a mixture of said materials to said surface, means for rotating said surface about said axis for moving the mixture of particulate materials in a path defined by said air-permeable surface, means for generating an air flow substantially radially inward through said path for effective separation of said mixture into heavier and lighter fraction containing strata, and means for separately discharging said separated materials.

3,844,415
SUPPORT DEVICE FOR FILES
Egon Heimann, Falkenberg 61, 56 Wuppertal-1, Germany
Filed Nov. 8, 1972, Ser. No. 304,980
Claims priority, application Germany, Nov. 9, 1971, 2155505
Int. Cl. A47b *63/00*
U.S. Cl. 211—43 **6 Claims**



1. A support device for record files and the like objects, disposed on a horizontal support surface, said device comprising at least a support panel adapted to support files in a vertical position having a vertical support wall and a base panel extending from the lower edge of said support wall and adapted to underlie said files, a substantial portion of the underface of said base panel being smooth to glide easily over said horizontal support surface; a pivotting member disposed below the vertical support wall adjacent the lower edge thereof and adapted to engage said horizontal support surface, a slip barrier connected to said underface of the base panel and being engageable with said horizontal surface, said slip barrier being spaced from the lower edge of said support wall by a predetermined distance so that by a lateral pressure exerted from the inside outwards to the upper part of the support panel said slip barrier would be raised from and thus disengaged from said horizontal supporting surface, when said pivotting member engages said horizontal supporting surface, said slip barrier also being spaced from the (outer) edge of said base panel opposite said lower edge by a predetermined distance so that by a lateral pressure exerted from outside inward to the upper part of the supporting panel said slip barrier would be raised from and thus disengaged from said horizontal supporting surface.

3,844,416
MEDIA STORAGE CABINET
Frank Potter, Syosset, N.Y., assignor to Filing Systems Inc., Plainview, N.Y.
Filed Dec. 5, 1972, Ser. No. 312,349
Int. Cl. A47b *47/00*
U.S. Cl. 211—162 **5 Claims**



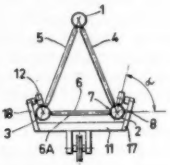
1. A media storage cabinet of rectangular form comprising a group of posts each having a fixed upright vertical position in a separate corner of the cabinet; the cabinet having parallel longitudinally extending opposed rails, and parallel laterally extending opposed rails; each post comprising four vertical flat walls, a first wall of which extends inwardly into the cabinet, a second wall of which extends at right angles from the first wall and is fixed in parallel abutting relation to one of the laterally extending rails, a third wall of which extends at right

angles from the second wall in opposed parallel relation to the first wall and in fixed parallel abutting relation to one of the longitudinally extending rails, and a fourth wall of which extends inwardly into the cabinet at right angles from the third wall and in opposed parallel relation to the second wall, the first wall being shorter in its lateral dimension than the opposed third wall, the fourth wall being shorter in its lateral dimension than the opposed second wall, the first and fourth walls each having a vertical leading edge separated from the other by a space co-extensive with the length of the post, the space being a result of the said shorter lateral dimensions of the first and fourth walls, and each of the first and fourth walls having therein a vertical row of bayonet slots having arm portions which open horizontally through the leading edge of the related wall to the space; the first wall of each post being disposed in co-planar relation with a corresponding first wall of a second post and also being disposed in parallel opposed relation to a corresponding first wall of a third post; the fourth wall of each post being disposed in co-planar relation to a corresponding fourth wall of a second post and also being disposed in parallel opposed relation to a corresponding fourth wall of a third post; a first media supporting bar having a hook extending from each end thereof, the hooks being slidably received into bayonet slots of opposed first walls of a selected pair of the posts through the arm portions of the slots; a second media supporting bar having a hook extending from each end thereof, the latter hooks being slidably received into bayonet slots of opposed fourth walls of a selected pair of posts through the arm portions of the slots; and said media supporting bars being slidably and selectively removable from the related bayonet slots by withdrawing the related hooked ends through the related arm portions of the slots without disturbing the fixed condition of the related posts.

3,844,417
HOISTING CRANE WITH HORIZONTAL LATTICE JIB AND BRAVELLING CARRIAGE

Lennart Holm, Vasteras, Sweden, assignor to Linden-Alimak AB, Vasteras, Sweden

Filed Apr. 26, 1971, Ser. No. 137,265
Claims priority, application Sweden, May 4, 1970, 6078/70
Int. Cl. B66c *21/00*
U.S. Cl. 212—18 **6 Claims**



1. A hoisting crane comprising,
a substantially horizontal lattice jib with at least one upper and at least two lower longitudinal runway frame bars,
connecting bars which interconnect said frame bars,
a travelling carriage supported by said runway frame bars
said travelling carriage having lifting means and including also carrying wheels which run directly on said runway frame bars,
said runway frame bars having a circular cross-section and being interconnected to said connecting bars with the center of gravity axis of each connecting bar intersecting the central longitudinal axis of the relevant runway frame bar,
each said carrying wheel having an essentially cylindrical configuration and being supported on the respective circular runway frame bar with its line of force intersecting the central longitudinal axis of said respective runway frame bar, said carrying wheel making an essentially point contact with said runway frame bar to thereby ensure the maintainance of intersection of said line of force with said longitudinal axis irrespective of the tilting of said carrying wheel as it rolls along said runway frame bar.

3,844,418
TELESCOPING JIB ASSEMBLY

Gerald P. Lamer, Rothschild, Wis., assignor to J. I. Case Company, Racine, Wis.

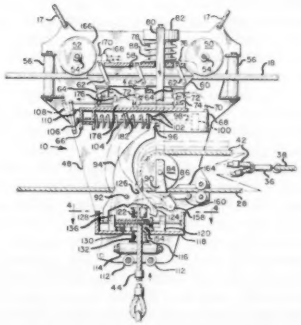
Filed Nov. 29, 1973, Ser. No. 420,011
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **3 Claims**

1. An extensible jib assembly for attachment to the outer end of a boom and comprising a plurality of hollow jib sections telescoped within each other for longitudinal extension and retraction to lengthen and shorten the jib assembly, one of said sections being a base section having an inner end adapted for attachment to a boom and another of said sections being an outer end section with at least one intermediate section between said base section and said outer end section, and means for extending and retracting said sections, said means including a pair of freely rotatable pulleys adjacent opposite ends of each intermediate section and a freely rotatable pulley adjacent an outer end of said base section, reversible drive means carried by the inner end of said base section, and a fixed length flexible cable having one end connected an inner end of said outer end section and entrained around each of said pulleys, an intermediate portion of said cable being in engagement with said reversible drive means and an opposite end of said cable being connected to said outer section, said cable having portions for each intermediate and base sections and one portion extending from said inner end of said base section to said outer end section, all of said portions being located with said hollow sections and extending substantially parallel to each other and parallel to the longitudinal axis of said jib assembly.

3,844,419
SKY LINE LOGGING APPARATUS

Melvin W. Holmes, Rt. 3, Box 184, Reedsport, Oreg. 97467

Filed Jan. 12, 1973, Ser. No. 323,970
Int. Cl. B66c *21/00*
U.S. Cl. 212—122 **6 Claims**



1. A carriage for use in a sky line logging system of the type including a sky line extending from a yarding apparatus at a

height over a log pick up area to a tie down, a load lifting line movable vertically through said carriage to lift and hold logs to be carried, and a haulback line extending from said yarding apparatus through said carriage to pull said carriage on said sky line, said carriage including:

a frame having an opening on its bottom portion through which said load lifting line extends;

wheel means rotatably mounted on said frame and engaging said sky line such that said frame is movable thereon;

trigger means automatically operable in response to the stopage of movement of said frame on said sky line;

multi-arm lever means mounted on said frame to pivot in response to actuation of said trigger to hold said carriage stationary on said sky line and release said load lifting line for lowering through said carriage;

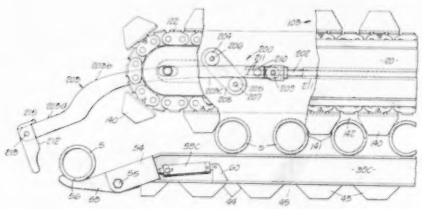
said load lifting line including log engaging means mounted on one end and a nub pressed thereon a distance from said end, said carriage including nub receiving and holding means whereby logs engaged by the end of said line may be held a distance above the ground; and

said nub receiving and holding means including a sliding plate having a keyhole shaped opening therein, said nub being sized to pass through the head of said keyhole shaped opening and be supported by the tail of said opening, said sliding plate being movable in one direction in response to pivoting of said multi-arm lever means and slidable in the opposite direction in response to the expansion of spring means compressed by the pivoting of said multi-arm lever means.

3,844,420
PIPE RACKING APPARATUS

James Bernard Walling, and Richard A. Van Wormer, both of Houston, Tex., assignors to Byron Jackson Inc., Long Beach, Calif.

Continuation of Ser. No. 868,550, Oct. 22, 1969. This application Nov. 28, 1971, Ser. No. 197,553
Int. Cl. E21b *19/04*
U.S. Cl. 214—1 P **10 Claims**

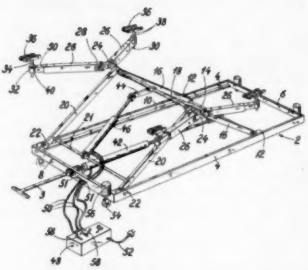


1. Apparatus for horizontally racking well pipe comprising in combination: pipe rack means including horizontally extended and laterally spaced rack beams having means for releasably holding stands of pipe in predetermined spaced positions on said beams, and feeder means for moving said stands of pipe to and from said positions when said stands of pipe are released, wherein said feeder means includes a plurality of horizontally extended and laterally spaced feeder conveyors having means for engaging said stands of pipe and moving the same on said rack beams to and from said positions, each of said conveyors including a horizontally extended support, an endless chain extended about said support, spaced pipe engaging members carried by said chain for engaging and maintaining the spaces between said pipe stands during movement thereof between said positions, said rack means including means for supporting a stand of pipe adjacent said rack beams, and said feeder means including pick-up means engageable with said last-mentioned stand of pipe for moving the same onto said rack beams for engagement by said pipe engaging members, said pick-up means including an elongated arm reciprocably carried by said support, actuator means connected to one end of said arm for effecting reciprocation of said arm, and pipe engaging finger means at the other end of said arm engageable with said stand of pipe upon movement of said other end of said arm past said stand of pipe and operable to shift said stand of pipe onto said rack beams responsive to movement of said arm toward said out-of-the-way position.

3,844,421
APPARATUS FOR LIFTING AND TILTING AUTOMOBILES

Erik Hauberg Skriver Nielsen, Kridthojvej 21, Hojbjerg, Denmark

Filed Dec. 21, 1972, Ser. No. 317,302
Int. Cl. B60p *1/04*
U.S. Cl. 214—1 A **11 Claims**



1. An apparatus for lifting and tilting vehicles, comprising: two substantially rectangular frame members pivotally interconnected along one common edge thereof, the opposite edges of said frame members being adapted to be rested on a support surface means beneath the vehicle, means for adjusting the horizontal distance between said opposite edges and for causing said same frame members to be swung up from an initial substantially horizontal position to inclined positions with said common edge raised above said support surface means, a vehicle support structure mounted on said frame members adjacent said common edge, said vehicle support structure being raised and lowered together with said common edge to cause the raising and lowering of the vehicle resting thereon, means for pivotally connecting said vehicle supporting structure with said frame members along a pivot axis parallel to said common edge, said vehicle supporting structure including vehicle carrier means disposed adjacent opposed sides of said pivot axis, and pivot control means operable for effecting pivoting of said vehicle supporting structure and therewith said vehicle carrier means to any desired angular position relative to said frame members.

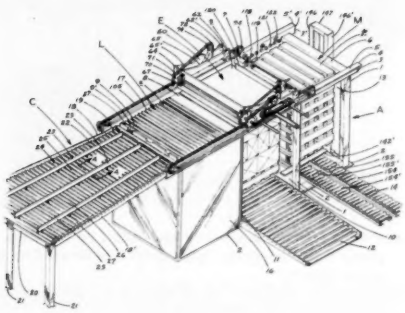
3,844,422
PALLET LOADING MACHINE

Irwin Donald Smith, 1066 Chantilly Rd., Bel Air; Thomas W. Tull, 4065 Kraft Ave., North Hollywood, both of Calif., and Frank W. Fenton, 5637 Fremont Ln., St. Louis, Mo. 63129

Continuation of Ser. No. 888,499, Dec. 29, 1969, abandoned. This application Feb. 4, 1972, Ser. No. 223,730
Int. Cl. B65g *57/24*
U.S. Cl. 214—6 P **3 Claims**

1. A pallet loading machine for the stacking of layers of units upon a storage pallet comprising a main frame, means provided on said frame for defining a discrete unit-accumulation zone for receiving a layer of units to be stacked, a pattern plate presented adjacent said accumulation zone, means for slidably transferring unitarily as a layer, a layer of units from said accumulation zone to said pattern plate, means for supporting a pallet beneath said pattern plate, means for sliding said pattern plate from beneath a layer of units received thereon for depositing the latter upon a pallet sup-

ported by said pallet support means, said means for supporting a pallet beneath said pattern plate comprising a plurality of horizontally aligned arms, lowering means for causing said arms to descend in pallet supporting condition from a position beneath said pattern plate to lowered position downwardly remote therefrom, means for retracting said arms from the supported pallet when said arms are in lowered position, conveying means for receiving said pallet from said arms and transferring same from the machine, elevating means for returning said arms upwardly while in retracted condition and during conveyance of the supported pallet from the machine, said main frame comprising means defining an empty pallet magazine, elevator means within said magazine for supporting



a stack of empty pallets therein, means provided in said empty pallet magazine for receiving said pattern plate when the same is withdrawn from beneath a layer of units for depositing same upon a pallet, means for operating said elevator means to present the uppermost empty pallet for engagement by said pattern plate after a layer of units has been withdrawn therefrom, pallet engaging means on said pattern plate for transferring the uppermost empty pallet to said pallet support arms, timing means for effecting upward travel of said empty pallet magazine elevator while said pallet support arms are being moved upwardly so that when the same are returned to pallet support position said pattern plate will deliver the erstwhile empty pallet to said arms, and means for causing descent of said elevator means within said magazine when the same is depleted of pallets.

3,844,423

PALLET ACCUMULATOR

Weston R. Loomer, and Thomas Fred Thornton, both of Rochester, N.Y., assignors to Hartman Metal Fabricators Inc., Victor, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,423
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA **5 Claims**

1. A device for accumulating empty pallets delivered thereto by a load carrier of the type having a retractable fork mechanism for transferring pallets to the device, and for removing stacked pallets from the device, comprising

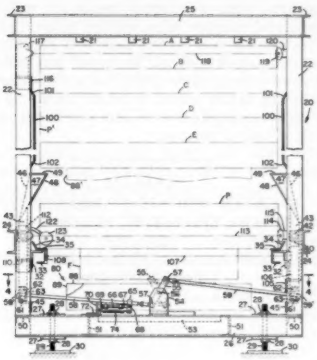
a frame having thereon a pair of spaced, stationary supports registrable with the fork mechanism on said carrier to receive and support horizontally thereon pallets delivered to the device by said fork mechanism,

a pair of spaced, movable supports mounted on said frame above said stationary supports, and movable into and out of operative positions in which they engage the lowermost pallet in a stack thereof to support the stack above said stationary supports,

a transfer member mounted for vertical movement between said supports,

cycling means operative each time an empty pallet is placed on said stationary supports to move said transfer member from a lower position beneath said stationary supports to an upper position above said movable supports, and vice versa, said member being engageable during its upward movements with the pallets on said stationary supports to elevate said pallets into a stack above said movable supports,

said movable supports being engageable by the pallets on said transfer member during the upward movements thereof to shift said movable supports to inoperative posiitons,



means normally operative after said transfer member has reached said upper position to return said movable supports to their operative positions beneath the stack of pallets on said transfer member to prevent said stack from being lowered onto said stationary supports upon movement of said transfer member back to its lower position, sensing means operable momentarily to interrupt the descent of said transfer member from its upper to its lower position, when the number of stacked pallets thereon reaches a predetermined value, and

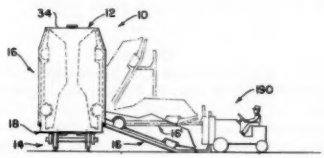
means operative upon interruption of the descent of said transfer member to retain said movable supports in their inactive positions long enough to allow said transfer member thereafter to return to its lower position with the stacked pallets thereon.

3,844,424

VEHICLE TRANSPORTING APPARATUS

Irving D. Ross, Jr., Barrington, and Thorvald Madland, Arlington Hts., both of Ill., assignors to Youngstown Steel Door Co., Cleveland, Ohio

Filed Apr. 8, 1970, Ser. No. 26,560
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 R **14 Claims**



1. Apparatus comprising:

a door member having an inner face, an outer face, and a peripheral edge;

hinge means for mounting said door member for swinging movement between an open position and a closed position;

at least one vertical lock bolt member and at least one horizontal lock bolt member carried by said door for movement between locked and unlocked positions;

guideway forming means extending along the outer face of said door for receiving and guiding an associated member for movement along said guideway in a first direction for opening said lock bolt members and in a second direction for closing at least said vertical lock bolt member;

lock bolt operating means extending between each of said lock bolt members and said guideway, said lock bolt operating means including means for preventing said associated member, when moving in said first direction, from moving said vertical lock bolt member to an unlocked position until said horizontal lock bolt member is in an unlocked position and when said associated member is moving in said second direction preventing withdrawal of said associated member until said horizontal lock bolt is in its locked position.

3,844,425

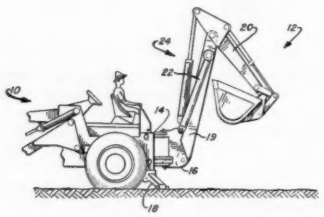
BACKHOE MOUNTING ARRANGEMENT

Leonard R. Bailey, Crawford, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 29, 1972, Ser. No. 239,231

Int. Cl. B66f *9/00*

U.S. Cl. 214—131 A **11 Claims**



1. In a vehicle having a material handling unit supported thereon, a quick-release coupling between said vehicle and said unit including vertically spaced upper and lower members on said vehicle, said members extending transversely of the longitudinal axis of said vehicle at one rear end; upper and lower elements on said unit, one of said elements having a downwardly directed recess receiving one of said members and the other of said elements having a flat inclined camming surface engaging the other of said members, so that said unit may be coupled to said vehicle by initially placing said recess over said one of said members and pivoting said unit about one of said members to have said flat camming surface engage and slide along the other member, said camming surface being located to force said recess into engagement with said support; and releasable lock means interconnecting said unit and said vehicle at a location below said upper member.

3,844,426

METHOD FOR CUTTING PANELS

James W. Campbell, 4408 N. Haltom Rd., Fort Worth, Tex. 76117

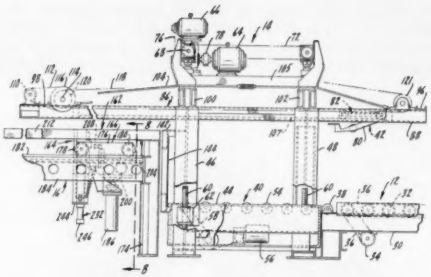
Continuation of Ser. No. 71,104, Sept. 10, 1970, which is a division of Ser. No. 805,943, Feb. 17, 1969, Pat. No. 3,662,789. This application Nov. 24, 1972, Ser. No. 309,113

Int. Cl. B65h *5/00*

U.S. Cl. 214—152 **5 Claims**

1. The method of feeding a predetermined number of sheets of material from a charge stack onto a gauge table for subsequent gauging by gauge clamps which index relative to a sawing station, including the steps of:

elevating the charge stack to a position with its top sheet at a predetermined distance above said gauge table; positioning the gauge clamps below the level of the gauge table;



pushing a selected number of said sheets on the stack together onto the gauge table over and forward of said gauge clamps;

elevating the remaining charge stack to a selected location for repeating said pushing step; and,

elevating the gauge clamps to a level above the gauge table for gauging the thus pushed stack therewith.

3,844,427

HANDLING DRUMS

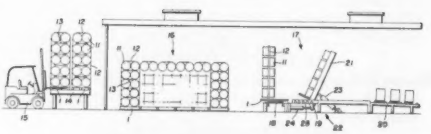
William L. R. Miles-Luscombe, Kingsley; Robert D. Jones, St. Helens, and Brian F. Walker, Cheste, all of England, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 27, 1973, Ser. No. 355,041

Claims priority, application Great Britain, May 10, 1972, 21919/72

Int. Cl. B65g *57/24*

U.S. Cl. 214—152 **3 Claims**



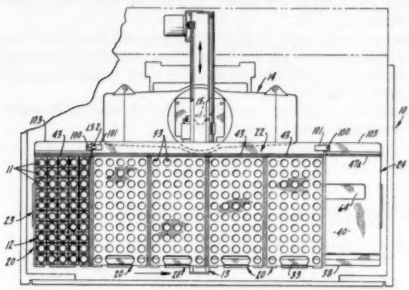
1. The method of handling empty drums which comprises the steps of: forming an assembly of drums by stacking a plurality of the same on their sides on a pallet in superimposed layers each comprising plural drums, and releasably securing the thus stacked drums to the pallet; moving such palletized drum assembly to a dismantling station for filling of the drums; transferring the assembly to a vertical receiver for the stacked drums; pivoting the receiver to an intermediate angular position to support the stack after removal of the securing means and the pallet, and removing said means and pallet for reuse of the same; and further pivoting the receiver in the same position to a substantially horizontal position from which the drums can be removed from the receiver and placed on conveyor means and the like for transport to the filling station.

3,844,428

TRAY STORAGE AND HANDLING SYSTEM FOR SCINTILLATION SPECTROMETERS AND THE LIKE

Robert E. Olsen, Glenn Ellyn, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Apr. 7, 1972, Ser. No. 242,182
Int. Cl. B65g 65/04
U.S. Cl. 214—301 23 Claims



1. Apparatus for conveying a plurality of trays of sample vials past a transfer station where successive transverse rows of vials are transferred from the tray to an operating station and then returned to the tray, said apparatus comprising the combination of a plurality of tray conveyors adapted to support a plurality of trays for movement along different paths, transfer means for transferring trays between said conveyors, means for indexing trays along a first one of said conveyors to align successive transverse rows of vials in the trays on said first conveyor with said transfer station, means responsive to the indexing of a complete tray past said transfer station for stopping the indexing of trays along said first conveyor and actuating said transfer means to transfer a tray from said first conveyor to a second conveyor, means responsive to the transfer of a tray from said first conveyor to said second conveyor for actuating said transfer means to transfer a tray off of said second conveyor, and means responsive to the transfer of a tray from said second conveyor to said first conveyor for actuating said indexing means to resume the indexing of trays along said first conveyor.

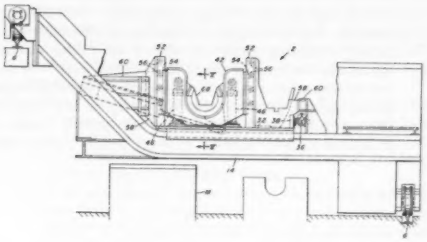
3,844,429

APPARATUS FOR MANIPULATING A HOT METAL TUNDISH ON A GANTRY CAR

Charles H. Bode, Jr., Bethel Park; Harry H. Britcher, Jr., Johnstown, and Joseph E. McKelvey, Penn Hills Township, Allegheny City, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 211,015, Dec. 22, 1971, abandoned. This application Apr. 13, 1973, Ser. No. 350,844
Int. Cl. B22d 11/10; B65g 65/34
U.S. Cl. 214—313 10 Claims

1. In a wheeled gantry car for supporting a tundish having trunnions projecting from opposite sides thereof mounted for limited horizontal and vertical movement on said car, said car having a frame with at least two spaced horizontal cross supporting beams, said cross beams extending transversely of the direction of travel of said car, the improvement therewith of apparatus for manipulating said tundish on said car, said apparatus comprising a pair of rotatable saddles mounted in upright position one on each of said cross beams substantially in alignment with each other, means connected with said cross beams for raising and lowering said saddles, said trunnions and said saddles having mating bearing surfaces whereby said trunnions rotate with said saddles to tilt said tundish when said saddles are rotated, means connected with said saddles for rotating the same, retaining means cooperable with said saddles for retaining said trunnions therein when said tundish is tilted, and means connected with each saddle for adjusting the same horizontally relative to its respective cross beam.

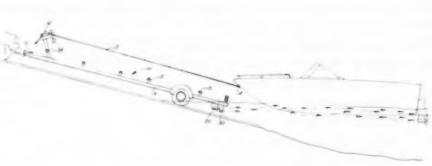


3,844,430

WATER REACTING MEANS FACILITATING LOADING OF BOAT TRAILERS

Harold A. Thompson, Box 70, Lakeside, Oreg. 97449

Division of Ser. No. 277,619, Aug. 3, 1972, Pat. No. 3,800,968. This application Dec. 13, 1973, Ser. No. 424,360
Int. Cl. B60p 3/10
U.S. Cl. 214—500 10 Claims



1. In combination,

a boat trailer of the type partially submerged during boat launching and retrieval operations, a winch having an entrained rope attached to the boat prow tethering same prior to winching of the boat onto the trailer,

motor means carried by said trailer,

a propeller powered by said motor means and producing an artificial water current rearwardly from the trailer whereby the tethered boat is urged by the water current toward alignment with the trailer centerline to facilitate loading of the boat.

3,844,431

UNLOADER MECHANISM FOR A HANDTRUCK

Burdette B. Crawford, 511 Elm St., Chadbourn, N.C. 28431

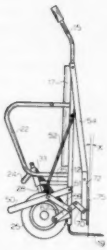
Filed May 18, 1973, Ser. No. 361,600
Int. Cl. B62b 1/10
U.S. Cl. 214—511 4 Claims

1. A handtruck for loading and transporting in a normal manner and for forcibly unloading a selected load, comprising in combination:

a. a rigid frame providing a vertically positionable and rearwardly tiltable rectangular front loading plane, rigid load receiving means adjacent the base of and extending generally perpendicularly and outwardly from said loading plane, handle means adjacent the top of and extending rearwardly of said loading plane, and an axle-wheel

arrangement supported from said frame rearwardly of the base of said loading plane and being arranged to support the load during its transport and while said loading plane is tilted rearwardly;

b. a load pusher comprising a first rigid pusher member having a load conforming and load engaging surface; said first pusher member being substantially vertically positionable during loading and unloading operations and during unloading being movable from a first position proximate the loading plane to a second position f forwardly thereof and during such movement being arranged to engage and push the load forwardly on said load receiving means, said push further comprising a pair of elongated support members each comprising a mated pair



of telescoping members and each being pivotally connected at a lower end to said first pusher member to provide pivotal support therefrom and at an opposite upper end to said frame and arranged such that said first pusher member is prevented from tending to lift said load during said unloading; and

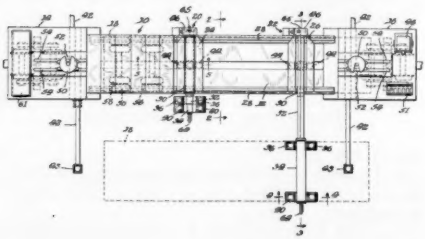
c. a foot treadle linkage mechanism for actuating said first pusher member including a vertically movable foot treadle arm pivotally mounted on said frame and including linkage members connecting said treadle arm to said first pusher member whereby when said treadle is forced downwardly during unloading said pusher member is forced outwardly to said second position to engage and push said load.

3,844,432

SELF-LOADING RAILWAY CAR

William H. Waddington, 1969 Sheffield Ln., Wheaton, Ill. 60187

Filed Jan. 8, 1973, Ser. No. 321,714
Int. Cl. B60p *1/64*
U.S. Cl. 214—517 **2 Claims**



1. A self-loading railway car comprising:

a pair of loader arms disposed on said car;

each of said loader arms comprising a pivotally mounted horizontally extensible telescoping hydraulic cylinder for placement under a truck trailer and a telescoping hydraulic /linder for vertically raising and lowering said horizontally extensible arms and a truck trailer carried by said arms;

means for permitting said loader arms to move along the length of said car to accomodate different designs of truck trailers;

stabilizing means disposed on said railway car comprising horizontally and vertically extensible means for stabilizing said railway car during loading and unloading operations;

means for moving a truck trailer along said arms when said arms are extended for loading a truck trailer onto said railway car and for unloading a truck trailer from said railway car; and

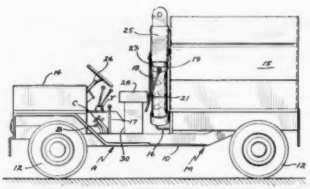
means for accepting the fifth wheel of said truck trailer when said trailer is on said car.

3,844,433

DEVICE FOR TRANSPORTING TURKEY FEED TO A TURKEY FEEDER

Gene W. Laajala, McGregor, Minn. 55760

Filed Nov. 10, 1972, Ser. No. 305,468
Int. Cl. B60p *1/42*
U.S. Cl. 214—522 **1 Claim**



1. A device for transporting turkey feed to a turkey feeder and filling the same comprising in combination:

a. a wheeled mobile chassis having an

b. open seat,

c. means carried by said chassis for propelling the same,

d. a receiver for feed carried by the chassis,

e. a conveying member connected to and communicating with said receiver,

f. means for conveying feed in said receiver to said conveying member,

g. means carried by said chassis for operating said propelling means

h. means for controlling the direction of the chassis,

i. said open seat positioned on said chassis directly adjacent said conveying member and adjacent said means for operating said propelling means and said direction controlling means,

j. said conveying member includes a spout pivotably connected thereto, and

k. means for pivoting said spout by an operator seated on said seat.

3,844,434

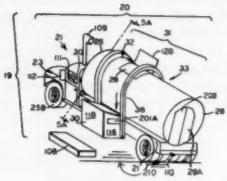
REFUSE CONTAINER LOADING AND TRANSPORT ASSEMBLY

Clyde A. Blakeley, and Joe M. Morgan, both of Lubbock, Tex., assignors to Fabit Corporation, Lubbock, Tex.

Division of Ser. No. 308,157, Nov. 20, 1972, Pat. No. 3,773,197. This application Aug. 20, 1973, Ser. No. 390,084
Int. Cl. B65f *9/14*
U.S. Cl. 214—731 **6 Claims**

1. Apparatus for handling, lifting, emptying and returning a container comprising a container handling and transport as-

sembly, said container handling and transport assembly comprising a wheeled support frame, an elevator assembly supported on the wheeled support frame, and a container engaging assembly movably supported by said elevator assembly frame,



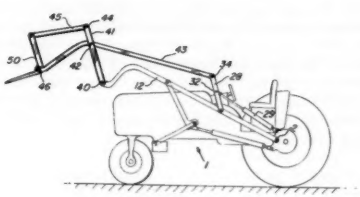
1. Said wheeled support frame comprising a rigid base frame, a mechanical power source on said base frame, a steering assembly comprising steering wheels operatively attached to the frame and traction wheels operatively connected to said power source; a refuse receptacle supported on said wheeled support frame and open at its top, at a top opening for said receptacle, a top lid movable over said top opening into opening and closing relationship therewith; means for closing and opening said lid over said top opening attached to said lid, and
2. Said elevator assembly comprising a track assembly and a frame moving means,
   a. Said track assembly comprising a pair of parallel rigid vertically extending tracks, both of said tracks firmly attached to the base frame and longitudinally spaced apart along the said frame, one near each end of said top opening of said receptacle, each track also extending upwards along one side of said receptacle and over a portion of the top thereof;
   b. the frame moving means comprising a power source supported on said base frame and operatively connected to said container engaging assembly;
3. Said container engaging assembly comprising an expansible frame assembly, a container engaging means, and a positioning control assembly therefor, said container engaging means supported on said expansible frame assembly, which assembly is movably supported on said track means and operatively connected to said frame moving means;
   a. Said expansible frame assembly comprising an interior frame, an exterior frame with a container engaging means and a control and positioning assembly;
      i. The interior frame comprising rigid vertically spaced apart horizontally extending upper and lower members and rigid horizontally spaced apart vertically extending front and rear members firmly joined together and forming a rigid flat frame, said interior frame also including movable support means extending to and movably held on said track assembly, said frame moving means comprising power means and power transmission means connected thereto for moving said interior frame along said track means by support means connected to said interior frame;
      ii. The exterior frame comprising vertically spaced apart horizontally extending exterior frame front and rear vertical members and horizontally spaced apart vertically extending exterior frame horizontal top and bottom members firmly joined together to form a rigid outer frame located lateral of said interior frame;
   b. Said container engaging means comprising rigid container arm support means movably supported on said exterior frame and extensible at right angles from said exterior frame, and extension and retraction means on said outer frame connected to said container arm support means to position said rigid container arm support means on said exterior frame;
4. Said frame control and positioning means comprising means for supporting said outer frame on said inner frame and for moving said outer frame toward and away from said inner frame and for pivoting said outer frame about horizontal axes relative to said inner frame, and wherein said frame control and positioning means comprises, in operative combination, a plurality of extensible double-acting piston units, each such piston unit comprising a piston cylinder and an extensible shaft therein, each such piston unit having a pivotal connection means at each end thereof;
   a. One pair of said piston units extending from a first pair of co-axial pivotal connections at the front and rear upper portions of the inner frame to a second pair of co-axial pivotal connections at the front upper and rear upper portion of said outer frame;
   b. A second pair of piston units each vertically spaced away from and below said first piston units and extending from a third pair of co-axial points of pivotal attachment on said inner frame to a fourth pair of co-axial pivotal connections on the outer frame near the lower portion of said outer frame, said third pivotal connections and said first pivotal connections being vertically spaced apart from each other in one direction and said fourth pivotal connections and said second pivotal connections being vertically spaced apart from each other in the same one direction, and
   c. A third piston unit extending from a fifth pivotal connection on the lower portion of said inner frame to a sixth pivotal connection on the upper portion of said outer frame, said fifth pivotal connection on said outer frame and said sixth pivotal connection being vertically spaced apart, and
   d. Said sixth pivotal connection being co-axial with said second pivotal connections, said movable support means comprising a plurality of wheels on each side of said frame, each said wheel located in operative engagement with one of said track means, each said track means having one ledge extending centrally and one ledge extending laterally of each such wheel.

3,844,435

HIGH REACH ATTACHMENT FOR LOADER

Emil F. Zimmerman, Richardton, N. Dak. 58652

Filed May 18, 1973, Ser. No. 361,517
Int. Cl. E02f *3/00*
U.S. Cl. 214—776 **6 Claims**



1. A lifting apparatus for extending the elevation and reach of a tractor hydraulically actuated lifting boom and tool, comprising
   a hydraulically actuated rear lever arm pivotally attached to said boom;
   a forwardly projecting lifting bar pivotally connected to said lever arm and having a downward bend near its forward end;
   a forward lever arm pivotally connected between said lifting boom and said lifting bar near the downward bend region, said forward lever arm extending upwardly beyond its connection with the lifting bar and having a pivot pin connection at its extended end;

means for pivotally connecting the tool to said lifting bar forward end; and

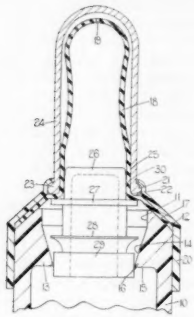
means for pivotally connecting said tool to said forward lever arm extended end.

3,844,436

INFANTS FEEDING BOTTLE

Eric Kenneth Hurst, London, England, assignor to Louis Woolf Griptight Limited, Birmingham, England

Filed May 22, 1973, Ser. No. 362,810
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 C **4 Claims**



1. An infants feeding bottle comprising a container for liquid, having an outlet opening surrounded by a seating, an internal projection on the container extending into said outlet opening, a resilient teat with an outlet orifice, the teat having a flange portion engaging the seating, means for securing the flange portion on the container seating to create a seal to contain the liquid in the container, a removable teat cap enclosing the teat, the cap having an internal annular portion engaging a further portion of the teat to create a further seal for the enclosure for the teat, and closure means sealing against communication between the interior of the container and the interior of the teat, said closure means being frictionally engaged in the interior of the teat and being displaceable by manipulation of the teat cap to remove the closure means from its sealing position, such manipulation being carried out with the teat cap covering the teat, and the closure means having two axially spaced protrusions which, when the closure member has been displaced from the sealing position, are located at either side respectively of said projection, to limit movement of the closure means within the container, the closure means being so shaped that, when in such displaced position, it permits substantially unrestricted flow of liquid, at least from the container to the teat.

3,844,437

SAFETY CLOSURE

James A. O'Connor, P.O. Box 827, Freeport, Bahamas

Filed July 18, 1972, Ser. No. 272,822
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **8 Claims**

1. A safety closure comprising:

a container having:

a circular rim portion;

a cap receiving neck portion extending therefrom of diameter less than the smallest diameter of the rim portion; and

a cap having an open end and a closed end and comprising:

a circular rim engaging portion at said open end;

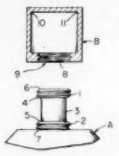
an internal portion of diameter greater than the rim engaging portion; and

a seating and locking portion at one of:

a. the opposed end of the neck to the rim portion,

b. the closed end of the cap;

one of said rim portion and rim engaging portion having at least one protuberance thereon and the other of said portions having at least one groove therein, said groove requiring seating of said protuberance therein and circumferential rotation of said cap in relation to said container to move said protuberance along said groove and permit passage of said rim engaging portion past said rim portion;



the seating and locking portion having a protuberance or groove to match the rim portion or rim engaging portion and to engage therewith and requiring circumferential rotation to lock and seat said cap on said container;

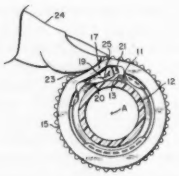
said cap receiving neck portion and said internal cap portion being of sufficient length to allow said rim engaging portion to move a spaced distance beyond said rim portion before engagement of said locking portion, and the respective diameters of said portions being sufficient to permit said cap to be loose on said neck to provide free movement in all directions when said rim engaging portion is within said cap receiving neck portion.

3,844,438

BOTTLE AND CAP LOCKING STRUCTURE

Robert St. Pierre, 1231 Euclid, Apt. 4, Santa Monica, Calif. 90403, and Leo St. Pierre, 248 Barnard, Venice, Calif. 90291

Filed Aug. 9, 1973, Ser. No. 386,931
Int. Cl. B65d *55/02*
U.S. Cl. 215—221 **2 Claims**



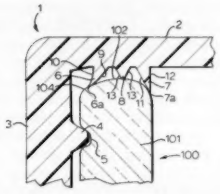
1. A bottle and cap locking structure comprising, in combination:

a. a bottle having at least one thread on it's neck terminating in a portion having a flat end normal to the circuferential direction of said portion;

b. a cap for said bottle having thread means for threaded engagement with said one thread to close said bottle, said cap including a thinned wall portion over a given circumferential extent, said thinned wall portion including a radially directed projection with a convexly curved end portion engaging a side of the neck of said bottle, said projection having a circumferentially spaced abutment positioned in opposed abutting relationship to said flat end of said one thread whereby said cap is blocked by said abutment against unthreading from said neck when said cap is threaded completely onto said neck, and

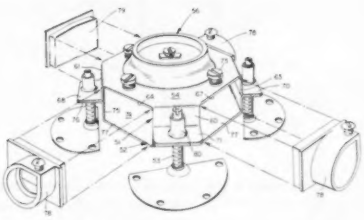
whereby radial pressure against said thinned wall portion rocks said projection on said convexely curved end in a plane normal to the axis of said bottle neck in a manner to move said abutment radially out of abutting relationship with said flat end so that said cap may then be unthreaded.

3,844,439
LINERLESS CLOSURES
Jacques Demers, and Robert Chartier, both of Waterloo, Quebec, Canada, assignors to Consumers Glass Company Limited, Rexdale, Ontario, Canada
Filed July 28, 1972, Ser. No. 276,238
Int. Cl. B65d *53/00*
U.S. Cl. 215—344 **4 Claims**



1. In combination, a glass container whose mouth configuration has a generally rounded upper edge or crown which in vertical section curves downwardly in opposite direction from a generally central crest portion, but which varies in vertical cross-section, crown surface contour around the mouth and eccentricity, and a linerless closure cap suitable for sealing the mouth of said container, said closure cap comprising a skirt and top, said skirt having means for securing said cap to the neck of said container, said top having on the underside thereof an integral outer annular resilient readily deflectable sealing fin disposed to cooperate with the downwardly curving portion of the container mouth crown outwardly of the central crest portion, said outer fin having an inner surface sloping outwardly of the fin axis from adjacent to said top to the free edge thereof for displacing said outer fin outwardly on contacting the downwardly and outwardly curving crown portion, an integral inner annular resilient readily deflectable sealing fin disposed to cooperate with the downwardly curving portion of the container mouth crown inwardly of the central crest portion, said inner fin having an outer surface sloping inwardly of the fin axis from adjacent to said top to the free edge thereof for displacing said inner fin inwardly on contacting the downwardly and inwardly curving crown portion, and an annular resilient compression ring stiffer and of lesser depth than said outer and inner fins and resistant to lateral deflection, located between said fins, said compression ring terminating in a "V" apex and adapted to contact the central crest portion of the rounded crown when the closure is applied to the mouth of the container, whereby upon contact of the compression ring with the crown surface, a line contact is first provided between the compression ring and the high spot on the crown crest and a wiping contact is provided between said fins and crown on opposite sides of said crown crest as said fins are deflected by said downwardly curving crown portions, and as the closure is advanced to a sealing configuration, said compression ring is compressed into flats at the high spots of the crown crest until at least a line contact is established with the low spots of the crown crest to define two isolated chambers one between the compression ring, the crown surface, and the inner fin, and the other between the compression ring, the crown surface and the outer fin, and said fins are deflected to first exhaust therebeneath air compressed in said isolated chambers and to thereafter establish a sealing contact of appreciable width with the downwardly curving crown portions on either side of the crown crest around said container mouth.

3,844,440
FLOOR BOXES
Robert W. Hadfield, Belpre, Ohio, and William H. Harding, Norristown, Pa., assignors to Textron Inc., Providence, R.I.
Division of Ser. No. 142,318, May 11, 1971, Pat. No. 3,784,042. This application Aug. 6, 1973, Ser. No. 385,819
Int. Cl. H02q *3/08*
U.S. Cl. 220—3.7 **2 Claims**



1. A floor box for interconnecting underfloor wiring conduits comprising:

a hollow upper body having a top wall and a plurality of side walls, the top wall having an opening to provide access to the interior of the box and adjacent side walls being disposed and spaced apart from one another to provide an upper opening and there being as many openings as there are side walls;

a plurality of upper flanges respectively connected to and extending outwardly from the bottom of the upper side walls;

a hollow lower body disposed beneath the upper body, the lower body having a bottom wall and a plurality of side walls, adjacent side walls being disposed and spaced apart one from another to provide a lower opening and there being as many openings as there are lower side walls;

a plurality of lower flanges respectively connected to and extending outwardly from the top of the lower side walls and being respectively engaged with the upper flanges whereby the two bodies form a hollow box and the upper and lower openings being in vertical alignment whereby to provide an opening to receive, alternatively, a closure cap or a conduit adapter;

a plurality of aligned apertures respectively in the upper and lower flanges;

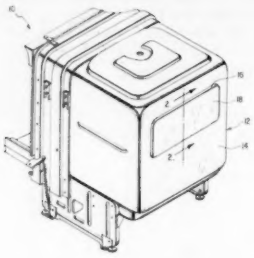
a plurality of fasteners, each fastener comprising a hollow body of substantial axial length extending through an aligned aperture, a top shoulder on the body extending over and engaging the upper flange and a bottom shoulder on the body extending over and engaging the lower flange, the two shoulders holding the flanges in tight engagement, and the interior of the body being threaded throughout its length; and

a plurality of threaded leveling lugs respectively threaded to said fastener threads, the lugs providing for vertical adjustment of the box and said substantial axial length of the fastener body being for use in providing vertical support and adjustment for the box.

3,844,441
RADIUSED MOLD WALLS FOR PLASTIC TUBS
David L. Clark, 7304 Cross Rd., Louisville, Ky. 40228
Filed Dec. 29, 1972, Ser. No. 319,202
Int. Cl. B65d *7/42*
U.S. Cl. 220—72 **2 Claims**

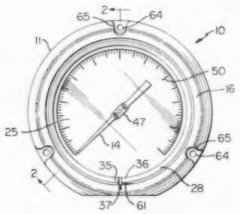
1. A unipartite plastic dishwasher tub having an open front, a compound lower wall configuration and a rear wall, said rear wall having a generally planar configuration disrupted by an

offset parallel planar wall portion merged into said rear wall by radiused merging offset portions, which portions are radi-



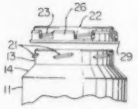
used to a dimension in the range of about 1/16 to about ¼ inch and are of a constant wall thickness, thereby giving said back wall a resistance to impact in excess of 5 foot-pounds.

3,844,442
GAGE CONSTRUCTION AND PARTS THEREFOR OR THE LIKE
Louis M. Puster, and Larry V. Price, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Sept. 20, 1972, Ser. No. 290,477
Int. Cl. B65d *25/54*; G01d *11/26*
U.S. Cl. 220—82 A **8 Claims**



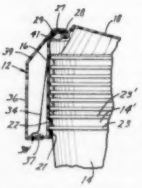
1. In combination, a casing, as for instruments and the like having an opening therein and an annular groove outboard of said opening and intersecting with said opening towards one end of the casing to define parts of said opening or opposite sides of said groove, a flexible and hollow sealing member carried by said casing adjacent one of said parts of said opening thereof, a lens disposed in said opening and having opposed sides spaced from each other by an outer peripheral surface that has a portion thereof disposed adjacent said one part of said opening and another portion thereof that closes part of said groove from intersecting with said opening, said lens having one of said sides thereof disposed against said sealing member and having the other of said sides thereof exposed at said opening, a lens ring means disposed against said other side of said lens to hold said lens in said opening, said lens ring means having an interlocking part thereof disposed in said annular grooves adjacent said outer peripheral surface of said lens and extending from said other side of said lens to a point intermediate said opposed sides thereof, said lens ring means having another part thereof engaging said casing at another part of said opening at said one end of the casing whereby said lens ring means is locked to said casing, and a spacing member being disposed near said one part of said opening to be carried by said casing, said sealing member engaging said spacing member and being disposed between said spacing member and said lens, said spacing member having a part that cooperates with a portion of said part of said opening of said casing to define a groove means that receives and supports said sealing member therein.

3,844,443
EASY-OPEN CONTAINER AND METHOD OF MAKING SAME
Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Mar. 19, 1973, Ser. No. 342,497
Int. Cl. B65d *41/06*
U.S. Cl. 220—40 R **11 Claims**



1. An easy-open container comprising, a container body having a top right circular cylindrical portion, a plurality of angularly spaced apart thread segments on said top portion, a cap having a cooperating plurality of angularly spaced apart thread segments in threaded engagement with said thread segments of said top portion, each of said thread segments of said cylindrical portion being surrounded above and below by parts of said cap defining an associated thread segment of said cap so that said thread segments of said cylindrical portion and said cap are in substantially perfect threaded engagement throughout due to having been made simultaneously, and axially compressed resilient sealing means between said container cap and cylindrical portion.

3,844,444
CUP DISPENSER
Michael W. Carroll, Bloomingdale Twp., DuPage County, Ill. 60108
Continuation-in-part of Ser. No. 786,938, Dec. 26, 1968, Pat. No. 3,563,411. This application Feb. 8, 1971, Ser. No. 113,427The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.
Int. Cl. A47f *1/04*
U.S. Cl. 221—46 **10 Claims**



1. A container dispenser for receiving therein a plurality of cuplike articles and for permitting said articles to be dispensed one at a time, said dispenser comprising:

a one-piece receptacle formed from a thin plastic material and including a cup-shaped portion having an elongated tubular portion defined by a continuous circumferential sidewall;

said cup-shaped portion further including a cover portion integrally and continuously connected to the sidewall of said tubular portion adjacent one end thereof for closing said one end of said tubular portion, the other end of said tubular portion defining an opening for permitting a plurality of nested cuplike articles to be inserted into said cup-shaped portion of said receptacle;

said tubular portion further including a plurality of protuberance means disposed adjacent said other end thereof and projecting radially inwardly relative to the inner peripheral surface of said sidewall for releasably holding said plurality of nested articles within said receptacle and for permitting said articles to be dispensed one at a time through said opening, said plurality of protuberance means being integral and continuous with said sidewall and substantially rigid relative thereto and spaced circumferentially around said opening;

each said protuberance means including a pair of axially spaced projections extending radially inwardly relative to the inner peripheral wall of said tubular portion, said pair of projections being spaced from each other so that the outermost projection is adapted to releasably engage and support the outermost article when the innermost projection is supporting the next outermost article so that only one article is dispensed at a time; and

said tubular portion including a plurality of stiffening ribs extending axially thereof and spaced circumferentially around said tubular portion, and said sidewall including said stiffening ribs and said cover portion and said protuberance means all being integral and continuous and of substantially uniform wall thickness.

3,844,445

TWO-PART TABLET DISPENSING RECEPTACLE

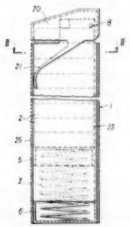
Eduard Haas, Parkring 10, A-1010 Vienna, Austria

Division of Ser. No. 300,487, Oct. 25, 1972. This application Feb. 8, 1974, Ser. No. 440,828

Claims priority, application Austria, Nov. 9, 1971, 9677/71

Int. Cl. B65h *1/12*; **B65d** *43/16*

U.S. Cl. 221—229 **2 Claims**



1. A two-part receptacle for receiving and sequentially dispensing individual shaped bodies from a stack of like ones of said bodies received in the receptacle, one of the receptacle parts being a housing having a dispensing end and the other receptacle part being a cover having side walls at the dispensing end, pivot means connecting said housing and said cover, spring means in the housing for pressing the stack of shaped bodies towards the dispensing end to place sequential uppermost ones of the shaped bodies of the stack into a dispensing position, a spring contacting said housing at a position remote from said pivot means, and being constituted by an extension of one of the cover side walls biasing the pivotal cover into a closed position, and the cover having a portion pushing the uppermost shaped body and dispensing it from the receptacle when the cover is pivoted against the spring bias.

3,844,446

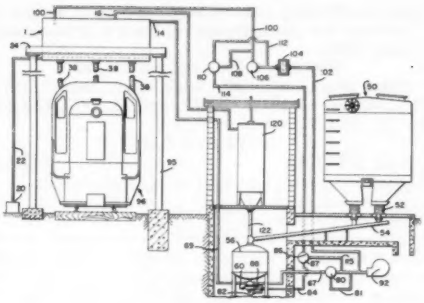
SYSTEM FOR CONVEYING SOLID PARTICULATE MATERIALS

Paul E. Solt, 529 S. Berks St., Allentown, Pa., assignor to Fuller Company, Catasanqua, Pa.

Continuation of Ser. No. 168,876, Aug. 4, 1971. This application July 26, 1973, Ser. No. 382,994

Int. Cl. B65g *53/18*

U.S. Cl. 222—61 **3 Claims**



1. A pneumatic conveying system for conveying material into a container comprising:

a source of solid particulate material;

a conveying line flow connecting said source and a container;

means for supplying gaseous fluid under pressure to said conveying line whereby the gaseous fluid acts as a conveying medium;

valve means associated with said source and said conveying line for controlling the admission of material into said conveying line, while maintaining the supply of gaseous fluid under pressure to said conveying line;

sensor means responsible to the level of fluidized material in a container to which material is to be conveyed through said conveying line including a tube adapted to extend into said container and terminate at a predetermined level and means for supplying gaseous fluid under pressure to said tube;

means responsive to said sensor for controlling said valve means whereby when said sensor indicates the level of material in said container is below a predetermined level, said valve means may be opened to admit material into said conveying line and when said sensor indicates the level of material in said container is at or above a predetermined level, said valve means is closed to prevent material from being admitted into said conveying line;

said means responsive to said sensor includes means responsive to pressure in said tube for closing said valve means to prevent material from being admitted into said conveying line when the pressure in said tube rises above a predetermined amount and permitting said valve means to be opened to admit material into said conveying line when the pressure in said tube falls below said predetermined amount;

a pressure responsive valve mounted in said means for supplying gaseous fluid under pressure, conduit means for transmitting the pressure upstream of said pressure response valve to said valve means and conduit means for transmitting the pressure downstream of said pressure responsive valve to said valve means, said valve means including means for comparing the pressures upstream and downstream of the pressure responsive valve to thereby control the admission of material into the conveying line; said means responsive to said sensor including a normally open relief valve positioned in said conduit means for transmitting the pressure upstream of said

pressure responsive valve, and fluid pressure means for closing said normally open relief valve when the pressure in said tube is above a predetermined amount to thereby prevent the pressure upstream of said pressure responsive valve from being transmitted to said valve means whereby said valve means closes to prevent material from being admitted to said conveying line.

3,844,447

VENDING MACHINES

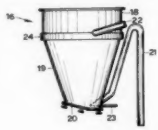
Stanley G. Marsberg, Johannesburg, South Africa, assignor to Servomat Fast Foods Proprietary Limited, Johannesburg, South Africa

Filed Aug. 9, 1972, Ser. No. 279,065

Claims priority, application South Africa, Aug. 17, 1971, 71/5504; Apr. 13, 1972, 72/2487; Apr. 13, 1972, 72/2488; Apr. 13, 1972, 72/2489

Int. Cl. B67d *5/56*

U.S. Cl. 222—129.4 **8 Claims**



1. A device for dispensing an individually brewed cup of beverage comprising:
   a. a container having a top and a closed base;
   b. means for adding at least one beverage ingredient to the container;
   c. at least one jet positioned to discharge a liquid into the container to cause a circulatory movement of the liquid in the container;
   d. a siphonic outlet from the container having an ascending portion with its inlet within the container adjacent the closed base, a descending portion with its outlet below the closed base and an uppermost portion below the top of the container so that when the liquid rises in the ascending portion and reaches said uppermost portion, the siphon will automatically substantially empty the dispenser.

3,844,448

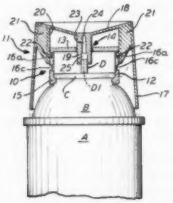
VALVE ACTUATING SAFETY CAP ASSEMBLY FOR PRESSURIZED DISPENSERS

James J. Sette, 320 South St., Apt. 18C, Morristown, N.J. 07960

Filed Apr. 27, 1972, Ser. No. 248,259. The portion of the term of this patent subsequent to Apr. 24, 1990, has been disclaimed.

Int. Cl. B67b *5/00*

U.S. Cl. 222—153 **1 Claim**



1. A cap assembly for a pressurized dispenser having a depressible valve that opens when axially depressed and closes when axially extended, said assembly consisting essentially of:
   1. a generally cylindrical element fixable upon said pressurized dispenser coaxially to said valve,
      i. said element having a top wall with an opening therein aligned with said valve,
   2. an overcap coactable with said element upon manipulation of said overcap to depress and thereby open said valve, said overcap including
      i. a top wall parallel to the top wall of the element,
      ii. a valve actuator integral with the top wall of the overcap, depending from said top wall in alignment with said valve, extending through the opening in the top wall of the element, having a discharge passageway therein for receiving and discharging emissions emanating from said valve when the valve is open, and including a counter bore at the valve facing end of the discharge passageway,
      iii. a skirt,
      iv. a radially inwardly extending node on the inner surface of said overcap,
   3. means providing a cam track in the outer surface of the cylindrical element, said node being slidable in said cam track, said cam track having three portions providing a node-receiving slot that runs continuously from a closed end of the first portion through the second portion to a closed end of the third portion, the second portion joining the remaining end of the first portion to the remaining end of the third portion,
      i. the first portion extending about said outer cylindrical surface of said element parallel to the top wall of the element,
      ii. the second portion extending away from said first portion in a direction perpendicular to the top wall of the element,
      iii. the third portion extending away from said second portion in a direction slanting downwardly from the top wall of said element,
   4. said node being in stationary valve-inoperative position during rotation of the overcap with the node in the first portion, said node being in stationary valve-inoperative position during depression of the overcap with the node in the second portion, and said node being depressed during rotation of the overcap with the node in the third portion after leaving the second portion, said node reaching valve-operating position during movement of the third portion over the node between said remaining end of the third portion and the closed end of the third portion,
   5. said element and said overcap having absent therefrom means biasing the same apart in a direction perpendicular to the top walls thereof.

3,844,449

MULTIPLE PURPOSE DISPERSER

Frederic W. Alter, Abingdon, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

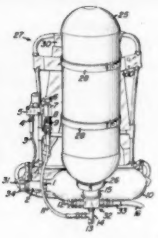
Filed Nov. 27, 1970, Ser. No. 93,208

Int. Cl. B05b *9/08*; **F41h** *9/02*

U.S. Cl. 222—175 **4 Claims**

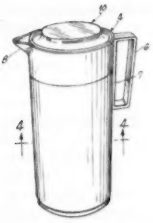
1. An apparatus for dispensing liquid and solid material comprising: a tubular frame carrier of substantially rectangular shape adapted for fitting to the back of a human being by way of shoulder and waist straps fixedly connected to said carrier with the long sides of said tubular frame carrier oriented vertically; a portable elongated tank containing material to be dispensed mounted centrally on said frame carrier parallel to said long sides; an elongated cylinder confining therein gas at high pressure mounted upon said frame carrier extending transverse to said long sides and adjacent to said tank lower most on said frame when in carrying position; a regulator means mounted upon one of said long sides and located between the tank and cylinder said regulator means being adapted to reduce the pressure between the cylinder and the

tank; a first conduit means connecting a high pressure side of the regulator means to the cylinder; a second conduit means connecting a low pressure side of the regulator means to an adapter means; said adapter means being adapted to connect to the tank and including a quick disconnect coupling means;



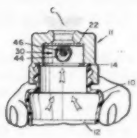
flow means including a check valve connected to the cylinder to permit fluid flow from the cylinder to the regulator means; and a trigger activated gun discharge means connected to an outlet side of the adapter means with hose to dispense the material from the tank.

3,844,450
VACUUM INSUALTED CARAFE
Craig A. Johnson, Antioch, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Sept. 8, 1971, Ser. No. 178,684
Int. Cl. B67d *5/08*
U.S. Cl. 222—183 **7 Claims**



1. A carafe having a protective casing with an open top and a closed bottom; a vacuum insulated filler having an open top; a collar having a surface extending over the top of said filler, a first portion extending upwardly from said surface and a second portion depending downwardly from said surface; said protective casing having interengaging means adjacent the top thereof and said collar having matching interengaging means adjacent the bottom thereof engaging said interengaging means of said casing; a pouring spout formed in said collar, a handle on said collar opposite said pouring spout and extending downwardly therefrom along said protective casing, said first collar portion having interlocking means spaced from said pouring spout; a cap having a downwardly depending flange provided with interlocking means engageable with said interlocking means on said first collar portion, a pair of diametrically opposed pouring openings formed in said flange, said interlocking means provided on said cap flange between said pouring openings, the spacing between the interlocking means on said cap and said pouring openings being such that one of said pouring openings will be in registry with said pouring spout when said cap is in interlocking engagement with said collar.

3,844,451
PARTICLE DISPENSER FOR ACCUMULATING FOR SUBSEQUENT RELEASE A CONTROLLED QUANTITY OF FINITE MAGNETIC PARTICLES
Phillip J. Parker, 1710 Pinehurst Rd., Dunedin, Fla.
Filed Mar. 15, 1973, Ser. No. 341,370
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 **20 Claims**

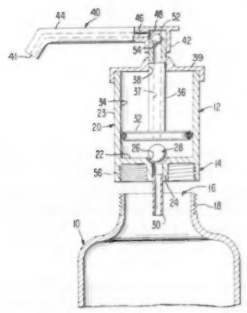


1. A particle dispenser for releasing a controlled quantity of finite, ferrous particles into the environment under low pressure to allow the particles to float onto a work surface, comprising container means for containing a supply quantity of said particles, a particle collecting zone in open communication with said container means and having aperture means through which said particles are dispensed into the environment, magnet means in said zone adjacent said aperture means for attracting and retaining a predetermined quantity of said particles in said zone, and means for selectively causing a flow of air through said zone past said magnet means and through said aperture means to thus cause said predetermined quantity of particles to be propelled from said zone and through said aperture means into the environment.

ERRATUM

For Class 29—446 see:
Patent No. 3,844,730

3,844,452
CONTAINER WITH REMOVABLE PUMP
Marshall R. Blum, c/o Gable Sales Company, 1224 Mariposa, San Francisco, Calif.
Continuation of Ser. No. 42,418, June 1, 1970, abandoned.
This application Mar. 22, 1972, Ser. No. 237,211
Int. Cl. B67d *5/42*
U.S. Cl. 222—321 **3 Claims**



1. A manually reciprocable pump for dispensing the contents of a container having an outlet, said pump comprising: a housing having an open upper end, sidewalls defining a chamber and a lower end, an integrally formed downwardly depending internally threaded annular skirt on the lower end thereof adapted to be coupled to said container for mounting said pump thereabove, said housing having a lower wall mem-

ber integrally formed with said sidewalls and positioned within said annular skirt, said lower wall member having an integrally formed outwardly extending tubular inlet member centrally located within said skirt and provided with a first valve seat on the inner side thereof;

an inlet tube coupled to said inlet member and having a distal end adapted to be immersed in said contents;

a closure cap releasably secured to said upper end of said housing, said closure cap having a central aperture therein;

a manually reciprocable hollow shaft having an upper end and a lower end, said shaft being slideably received in said central aperture;

an annular piston secured to the lower end of said hollow shaft, said piston having a peripheral groove and a sealing member mounted in said groove in sealing contact with the walls of said chamber, the combined diameter of said piston and said sealing member being no less than the diameter of said container outlet, said piston having a central bore for providing fluid communication between the interior of said shaft and the volume below said piston;

a first one-way valve located in said chamber between said piston and said first valve seat, said first valve permitting flow from said inlet tube to said chamber when said piston is translated away from said inlet tube in response to upward movement of said shaft;

the upper end of said shaft being provided with a second valve seat;

a nozzle including a hollow sleeve releasably connected to said upper end of said shaft and a projecting section integral with said sleeve and extending laterally outwardly therefrom, said section including a fluid passage communicating through said sleeve with said shaft for dispensing material from said chamber through said shaft; and

a second one-way valve positioned within said hollow sleeve in cooperative relation with said second valve seat, said second valve permitting flow from said chamber through said nozzle when said piston is translated toward said inlet tube in response to downward movement of said shaft;

the structure of said pump as defined herein permitting facile disassembly and assembly thereof and enabling said pump to be quickly attached to said container; and

an intermediate attachment member for coupling said pump to an associated carton having a V-shaped sloping top closure member with a central upstanding rib, said attachment member comprising a unitary base member having a lower surface conformable with said sloping top closure member for embracing said rib, and a tubular neck secured to said surface laterally of said rib when said attachment member is received on said carton, said neck having a lower end adapted to be received by an aperture in said top closure member and a threaded upper end coupled to said annular skirt, whereby said pump is secured to said attachment member.

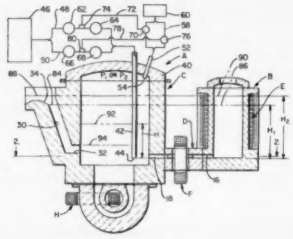
3,844,453

APPARATUS AND METHOD FOR MELTING AND POURING METAL

Henry L. Eickelberg, Port Washington, Wis., assignor to Modern Equipment Company, Port Washington, Wis.

Filed Jan. 5, 1973, Ser. No. 321,450
Int. Cl. B22d *37/00*
U.S. Cl. 222—399 **8 Claims**

1. In apparatus for melting and pouring metal comprising, a melting and supply first vessel, a holding and pouring second vessel, a connecting channel connecting said vessels adjacent the bottom portions thereof, an outlet pour passage in said second vessel having an outlet opening, and pressurizing means for pressurizing said second vessel between a ready-to-pour pressure wherein molten metal in said second vessel is slightly below said outlet opening and a pour pressure wherein molten metal flows from said second vessel through said outlet opening, the improvement which comprises said first vessel being at atmospheric pressure and said connecting channel being dimensioned for allowing free flow of molten metal between said first and second vessels as said pressurizing means is switched between said ready-to-pour and pour pressures so that said first vessel remains substantially full at all times and the metal level therein fluctuates only between low and high levels corresponding to said ready-to-pour pressures while the metal level in said second vessel fluctuates between a high level corresponding to said pour pressure and variable



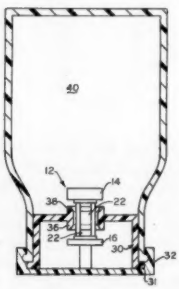
lower levels and coreless induction heating means for heating and melting metal in said first vessel extending upwardly to a point at least adjacent the low level and a channel-type induction heater in said connecting channel, said connecting channel having a first channel passage between said first vessel and said channel-type induction heater and a second channel passage between said channel-type induction heater and said second vessel, said second channel passage being larger than said first channel passage.

3,844,454

MEASURED DISPENSER

Dean H. Buchtel, 1510 Menlough Ave., Canton, Ohio 44708

Filed July 6, 1972, Ser. No. 269,388
Int. Cl. G01f *11/38*
U.S. Cl. 222—453 **6 Claims**



1. Apparatus for dispensing precise amounts of a given substance, comprising:

a measuring unit being tubular in shape wherein a first end is totally open, having a flanged lip about the periphery thereof, and the second end is totally enclosed but for the presence of a sleeved tubular inlet port in the center thereof;

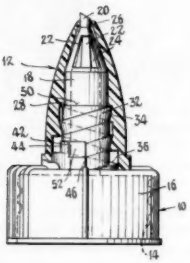
a cap covering the first end of the measuring unit and sealing the flanged lip about the periphery, the cap providing a boundary for and thereby defining the volume of the measuring unit; and

a plunger, positioned within the inlet port, having a cylindrical center portion with passage slots therein, a first end disk at one end of the center portion and a second end disk at the other end of the center portion, the end disks limiting the motion of the plunger within the inlet port and providing seals at the inlet port periphery, and a protrusion attached to the second end disk limiting, by contact with the cap, the motion of the plunger.

3,844,455
CAPTIVE CAP FOR DISPENSERS

Morton B. Stull, c/o Stull Engraving Co. 221-223 Banta Ave., Garfield, N.J. 07026

Continuation-in-part of Ser. No. 867,199, Oct. 17, 1969, abandoned. This application Nov. 20, 1972, Ser. No. 308,237
Int. Cl. B67d *3/28*
U.S. Cl. 222—525 **7 Claims**



1. A captive dispensing cap construction comprising, in combination:

a. a tubular body part adapted to be carried by a container and having a discharge spout,

b. a screw cap part carried by said body part and surrounding said discharge spout,

c. said cap and body parts having two pairs of mutually engageable portions,

d. one pair of mutually engageable portions comprising cooperable screw thread means respectively on said parts, for moving the cap part axially on the body part as the cap part is turned,

e. the other pair of mutually engageable portions comprising cooperable stop lugs disposed respectively on the body and cap parts only at circumferentially localized points, said lugs having a plurality of sets of mutually engageable surfaces which are disposed in planes substantially parallel to the axis of the tubular body.

f. one set of said mutually-engageable surfaces of the lugs becoming engaged and acting in a manner to halt the turning of the cap part as the latter is screwed toward its full-on position on the body part,

g. another set of surfaces of the said lugs becoming engaged and halting the opposite turning of the cap part as the latter is unscrewed through part of a revolution from said full-on position,

h. one of the mutually-engageable surfaces of said stop lugs having a sloping camming face with respect to the other stop lug, to cam one lug radially outwardly and facilitate bypass of the lugs as the cap part is screwed onto the body part,

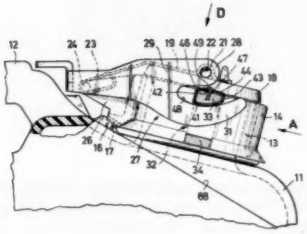
i. at least one of said parts having lug-carrying wall portion which is resilient and yieldable in a radial direction and capable of localized stretching to enable the stop lug on the cap part to be forced past the outside of the stop lug on the body part as the cap part is applied to the body part and screwed toward its full-on position,

j. said lugs engaging one another along an arc of substantially less than 90° during said bypass of the lugs.

3,844,456
DEVICE FOR DISCHARGE NOZZLES ON CANS

Wolfram Schiemann, Eugen Nagele Strasse 17, 7140 Ludwigsburg, Germany

Filed Dec. 20, 1971, Ser. No. 210,063
Int. Cl. B65d *47/00*
U.S. Cl. 222—545 **23 Claims**



1. A blow-molded thermoplastic can having a blow-molded nozzle integral therewith comprising

an outer wall on said nozzle,

insert ring means secured within said nozzle in the vicinity of its outer end for hindering the inward movement of said nozzle,

cover means for closing off said nozzle,

sleeve means of a substantially harder material than said nozzle and said can,

connecting means provided between the outer wall of the nozzle and the inner wall of said sleeve means for rigidly connecting the sleeve means about said nozzle for hindering the outward movement of said nozzle,

means for hindering rotation of said sleeve means on said nozzle in either direction,

the lower face of said sleeve means being spaced from the outer face of said can out of which said nozzle wall emerges,

downwardly projecting and outwardly tapering skirt means on said sleeve means spaced from contact with the outer face of said can out of which said nozzle wall emerges,

O-shaped ring means between said skirt means and the surface of said can compressible in the direction of the geometric longitudinal axis of the nozzle,

said cover means being pivoted from said sleeve means.

3,844,457
PAINT CAN POUR SPOUT WITH BRUSH SUPPORT AND ATTACHMENT

Orpha J. Smart, 4876 N.E. Stephens St., Roseburg, Oreg. 97470

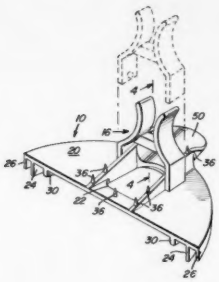
Filed Apr. 24, 1973, Ser. No. 354,096
Int. Cl. B65d *25/42*
U.S. Cl. 222—570 **5 Claims**

1. A pour spout for fluid containers, comprising, in combination:

a. a member provided with an opening; and

b. means provided on the member for permitting attachment of the member to internally grooved and externally rolled lips of fluid containers, the attachment permitting means including a flange, a rim arranged for cooperating with the flange to selectively engage an externally rolled lip of a container, and a projection to selectively engage

an internally grooved lip of a container different from the container having the externally rolled lip, the flange, rim,



and projection having co-directional, arcuate configurations, and being arranged as partial rings, with the flange arranged between the rim and projection.

3,844,458

WRIST WATCH BRACELET

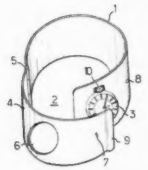
Lucie Lanvin, Paris, France, assignor to Jeanne Lanvin SA, Paris, France

Division of Ser. No. 53,899, July 10, 1970, Pat. No. 3,700,148. This application July 7, 1972, Ser. No. 269,883

Claims priority, application France, July 10, 1969, 69.23429

Int. Cl. A44c *5/00*

U.S. Cl. 224—4 J **6 Claims**



1. A wrist-watch strap formed generally in the shape of a ring when worn on the wrist of a person, comprising two elongated strips of semi-rigid material curved semi-elliptically in their lengthwise directions and being hingedly joined to each other at one of their respective ends to provide a so-called open-member and a closure-member, the space between said one end of the open-member and the free end of the open-member defining an opening for placing the strap on the wrist, a portion of the closure-member being disposed in closely overlapping relationship to a portion of the open-member remote from said one end and an opening provided in said closure-member for viewing the dial of said watch, and releasable locking means to hold the closure-member in said overlapping relationship, the free marginal end portion of said closure-member being outwardly curved to define a stabilizing means, whereby when said strap in closed position is placed with a curved peripheral surface of the open-member in contact with a supporting surface, said stabilizing means also engages with said supporting surface to hold the strap in a condition to permit viewing of the watch dial.

3,844,459

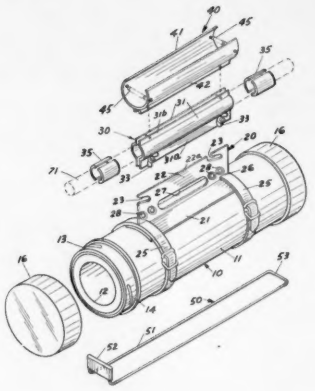
CARRIER ACCESSORY FOR BEVERAGES

James L. Chambers, Irving, Tex., assignor to H. C. Criswell, Arlington, Tex.

Filed May 22, 1972, Ser. No. 255,737

Int. Cl. B60r *27/00*

U.S. Cl. 224—29 B **11 Claims**



1. A carrier assembly comprising

a tubular container of heat insulating material having at least one open end closed by a removable end cap; means for securing said end cap removably in position to close and seal the open end of said container;

a container bracket having a base, configured to engage and be secured to an outer wall of said container, and having an elongated planar rib projecting from said base to be positioned in a radial plane of said tubular container; said rib having a linear distal edge parallel to said base; means for securing said container bracket to said container;

a support bracket comprising confronting clamping portions, each defining an elongated groove for enclosing a portion of a tubular member of a supporting structure and each defining an elongated narrow clamping flange; said confronting clamping flanges having at least one pair of aligned holes; and bolt and wing nut means extending through said holes for clamping said confronting portions to said tubular member;

said support bracket clamping flanges defining an elongated slot disposed in a radial plane of the supporting tubular member to receive said container bracket rib; said rib having at least one elongated mounting slot opening adjacent to said distal edge and extending generally parallel to said distal edge; and said slot being configured to accommodate a bolt means of said support bracket, whereby said container bracket is secured to said support bracket and is readily disengaged therefrom.

3,844,460

HOLDER FOR CAN OR BOTTLE OF BEER OR OTHER BEVERAGE CONTAINER

Amedee H. Courtright, 131 Geddes Ter., Waterbury, Conn. 06708

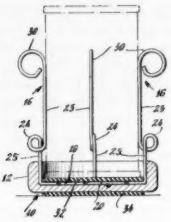
Filed Jan. 4, 1973, Ser. No. 321,002

Int. Cl. B65d *25/00*

U.S. Cl. 224—45 C **1 Claim**

1. A device by which a person may hold a beer can or bottle of other beverage container while drinking out of its open top, which comprises,

a support member having an upwardly extending peripheral rim,
a handle curving upwardly and outwardly from the support member, and
a plurality of spring arms extending upwardly from the



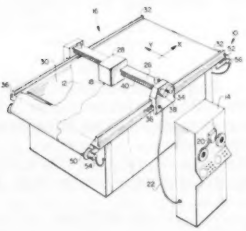
support member and spaced from one another around the rim of the support member,
each spring arm being offset outwardly adjacent its lower end and each spring arm intermediate its ends defining a loop and the portion of the spring arm below the loop being offset outwardly with respect to the portion of the spring arm above the loop.

3,844,461

PRECISE INDEXING APPARATUS AND METHOD

Samuel Clifford Robison, Manchester, and Heinz Joseph Gerber, West Hartford, both of Conn., assignors to Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Apr. 9, 1973, Ser. No. 349,614
Int. Cl. B65h *17/36*
U.S. Cl. 226—8 **25 Claims**



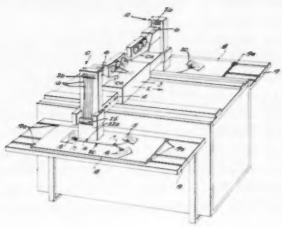
1. In an automatically controlled instrument system in which sheet material is spread on the supporting surface of a table while a carriage suitable for accurately positioning an instrument which works upon different areas of the spread sheet material is controllably moved in one direction back and forth over the table parallel to the supporting surface and relative to the sheet material in a stationary position, the improvement comprising: coupling means attached to the carriage and engagable with the sheet material on the supporting surface whereby the sheet material may be precisely shifted relative to the table in said one direction with the carriage.

3,844,462

DISPENSING HEAD FOR STRAND MATERIAL

John W. Tarbox, Malibu; Walter E. Hinds, Los Angeles, and Rodolfo Castro, La Palma, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 103,233, Dec. 31, 1970. This application July 24, 1972, Ser. No. 274,160
Int. Cl. B65h *25/00*
U.S. Cl. 226—25 **15 Claims**



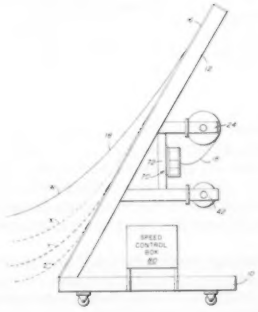
1. A dispensing head for strand material comprising:
means for supplying strand material; and
means for feeding said strand material including means for drivingly engaging said strand material in response to tension on the strand material applied at the drivingly engaging means from downstream thereof to produce driving engagement of said strand material and the drivingly engaging means to dispense the strand material.

3,844,463

PLASTIC BAG WINDING MACHINE

Robert M. Copp, Brockton, Mass., assignor to Park-Air Corp., Brockton, Mass.

Filed Apr. 13, 1972, Ser. No. 243,762
Int. Cl. B65h *23/18, 25/02, 25/20*
U.S. Cl. 226—42 **4 Claims**



1. Apparatus for controlling the winding of material onto a take-up roll comprising;
an inclined feed plate positioned for receiving said material, fed from one side of said plate, against at least a portion of the outer inclined surface of said plate with said material contacting the top end of said plate and draping downwardly therefrom,
means including a drive roll, drive means and drive roll support means disposed on the other side of said plate for feeding said material to the take-up roll,
a pair of sensors including a first sensor and a second sensor spaced above the first sensor and disposed along said inclined surface,

each said sensor capable of sensing when the material is less than a predetermined distance from the sensor in which case the sensor is considered as being covered,

said plate having means for receiving said sensors,

means for establishing a reference speed setting for controlling the speed of operation of said drive means,

a power source,

bidirectional means for changing said speed reference setting, said bidirectional means including forward and reverse inputs selectively coupled to said power source for increasing or decreasing, respectively, said speed reference setting,

means responsive to said first and second sensors being uncovered for coupling said reverse input to said power source to thereby decrease said reference speed setting, means responsive to said first sensor being uncovered and said second sensor being covered for uncoupling any of said inputs from said power source to thereby maintain said reference speed at a fixed setting, and

means responsive to said first and second sensors being covered for coupling said forward input to said power source to thereby increase said reference speed setting.

3,844,464

TAPE RECORDER AUTOMATIC STOP MECHANISM

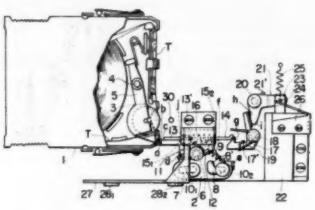
Takemi Kitamura, and Ason Takaki, both of No. 25-1, Aza Nishimachi, Yamada, Kawagoe-Shi, Saitama, Japan

Filed Nov. 27, 1972, Ser. No. 309,850

Claims priority, application Japan, Nov. 27, 1971, 46-110680

Int. Cl. B65h *17/20, 17/48*

U.S. Cl. 226—174 **4 Claims**



1. In a tape recorder for receiving an insertable tape cartridge, said tape cartridge carrying a movable pinch roller and said tape recorder including a drive capstan positioned in the path of said insertable tape cartridge with said pinch roller pressing a tape carried thereby against the capstan for effecting tape movement after insertion, the improvement comprising:

a slide bar engageable with a slide plate, both said slide plate and said slide bar being movable in the direction of cartridge insertion in response to contact of one end of said slide plate with said cartridge,

first latching means carried by said slide plate and engaging said slide bar to prevent contact between said slide bar and said movable pinch roller, and

second latching means engaging said slide bar in response to full insertion of said cartridge and operative engagement of said pinch roller, said tape and said capstan, and means for releasing of said first latching means when said second latching means are engaged for permitting sound recording or reproducing, and

means responsive to a condition of said running tape during recording or reproducing for releasing said second latching means to permit said slide bar to release said pinch roller from said capstan without movement of said inserted cartridge.

3,844,465

MATERIAL HANDLING APPARATUS

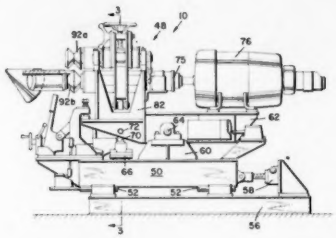
William J. Hill, Holden, and Kenneth L. Kiusmier, Worcester, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Division of Ser. No. 249,691, May 1, 1972, Pat. No. 3,750,799.

This application July 3, 1973, Ser. No. 376,191

Int. Cl. B65g *39/00*

U.S. Cl. 226—181 **2 Claims**



1. Apparatus for axially propelling an elongated element along a given path, comprising: lower support means positioned to one side of and at a level beneath that of the path, a platform mounted on said lower support means for pivotal movement about an axis generally parallel to the path, a first rotatable roll shaft carried on said platform, means on said platform for driving said first roll shaft, linkage means on said platform, a second rotatable roll shaft parallel to said first roll shaft, second roll shaft being adjustably carried by said linkage means for movement towards and away from said first roll shaft, first and second pinch rolls mounted respectively on said first and second roll shafts for rotation therewith, a first operating means for pivotally adjusting said platform relative to said lower support means between an operative position at which said first pinch roll contacts an elongated element at said path and an inoperative position spaced below said path, and a second operating means connected to said linkage means for adjusting the position of said second roll shaft and the second pinch roll mounted thereon between an operative position contacting an elongated element at said path and an inoperative position spaced above said path, whereupon when said pinch rolls are operatively positioned, an elongated element contacted therebetween will be propelled axially along said path.

3,844,466

PALLET MAKING DEVICE

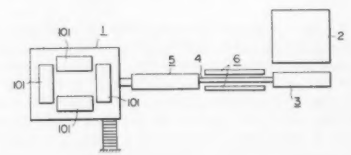
Tadashi Narita, and Shusho Ishimaru, both of Kanagawa-ken, Japan, assignors to Showa Drum Manufacturing Co., Ltd., Kanagawa-ken, Japan

Filed Aug. 28, 1972, Ser. No. 284,104

Claims priority, application Japan, Sept. 18, 1971, 46-72859

Int. Cl. B27f *7/02*

U.S. Cl. 227—40 **1 Claim**



1. A device for use in the making of wooden pallets wherein each pallet includes a plurality of stringer members arranged

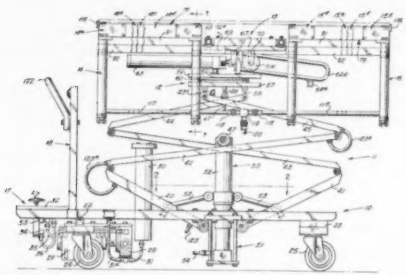
in parallel spaced relationship to each other and a plurality of elongated plank pieces arranged and joined respectively in a perpendicular manner to said stringer members; comprising a nailing device operatively disposed in a vertical plane and having nail alignment feeding means for continuously feeding nails therethrough into nailing head means, said nailing head means arranged for simultaneously performing the nailing operations into the intersection locations of said joined stringer members and said plank pieces; a vertically-oriented assembly jig means operatively mounted adjacent said nailing head means and including a movably-mounted L-shaped jig frame having parallel-arranged support arm means for supporting said stringer members, said support arm means including adjustably-mounted holding jaw means for supporting said elongated plank pieces, said L-shaped jig frame holding said stringer members and said elongated plank pieces in their assembled relative dispositions identical to those of the completed pallet, said assembly jig means being operative between a pallet assembling station and a nailing station in said nailing device; and a pallet handling device for pivoting the completed nailed pallet from its vertical position to a horizontal position after receiving said pallet discharged from said assembly jig means which has been transferred from the pallet assembling station to the nailing station upon completion of the nailing operation.

3,844,467

PORTABLE ELEVATING PLATFORM

W. Ray Millican, Tower Trailer Pk., 1311 E. Main St., Grand Prairie, Tex. 75050

Filed Mar. 19, 1973, Ser. No. 342,608
Int. Cl. B27f *7/02*
U.S. Cl. 227—40 **14 Claims**



1. In apparatus for nailing panels to a wall or ceiling structure

a support platform for a panel, adapted to be mounted on a positioning apparatus; said support platform comprising a frame mount having means for coupling to a positioning apparatus, a plurality of parallel rails mounted on said frame mount; and a plurality of hammer units mounted on said rails for defining a panel supporting plane and for driving nails at selected positions through a panel supported on said support platform;

each hammer unit comprising an elongated small diameter cylinder housing disposed transverse to the panel supporting plane and defining the lateral extremity of the hammer unit on at least one side; each hammer unit further comprising a nail passage disposed at one end of said cylinder housing in axial alignment therewith, a nail magazine and feeding means for feeding nails successively into said nail chamber, a hammer piston disposed in said cylinder housing for reciprocating movement and including an axially projecting pin for engaging and driving nails in said nail chamber, an air reservoir and means for communicating said reservoir with a source of compressed air, valve means for selectively communicating said cylinder housing with said reservoir to effect drive of the hammer piston, solenoid operated means for controlling said valve means, and solenoid operated means for actuating said nail feed means;

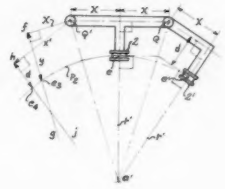
and said valve solenoid means for said plurality of hammer units, and said nail feed solenoid means for said plurality of hammer units, being adapted for connection to respective common operator switches for simultaneous control of individual hammer unit functions from a remote switch location.

3,844,468

UNIVERSAL CARRIAGE APPARATUS FOR OPERATING ON PIPES AND ANALOGOUS WORKPIECES OF VARIOUS DIAMETERS

Jerome W. Nelson; James B. Andolph, and Ford S. Miller, all of Houston, Tex., assignors to CRC-Crose International, Inc., Houston, Tex.

Filed June 27, 1973, Ser. No. 374,050
Int. Cl. B23k *37/02*
U.S. Cl. 228—13 **26 Claims**



1. In an adjustable traveling carriage adapted to transport an operative instrument in a work plane which is perpendicular to the longitudinal axis of a cylindrical work piece whose radius may vary from piece to piece, said carriage being under guidance of a cylindrical surfaced track attached to a said workpiece with its central main axis in substantial coincidence with the workpiece axis, said track including a guiding element which is parallel to said work plane, the combination which comprises:

a. At least two subframes mounted for relative angular adjustment with respect to each other about an adjusting axis which is perpendicular to said element and said work plane,

b. A tool supporting mount carried by at least one of said subframes,

c. A track-following carriage guiding member mounted in each of at least two of said subframes and adapted to follow said track element for guiding the carriage movement with respect to the guide track,

d. A driven traction member also mounted in a subframe for engaging said track to move the carriage with respect to said track,

e. Means for locking said subframes rigidly in adjusted relationship to conform the carriage to said track,

f. Each of said guiding members and traction member being located in its subframe on a line which is radial to said central main axis at a predetermined distance from a perpendicular to said line through an adjacent adjusting axis, offset from said axis along said perpendicular by a predetermined distance X.

3,844,469

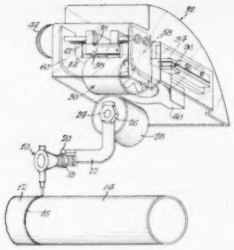
APPARATUS FOR OSCILLATING A WELDING TOOL

Clifford M. Westfall, 13 Brookfield, Conway, Ark. 72032

Filed Dec. 27, 1972, Ser. No. 318,870
Int. Cl. B23k *5/00*
U.S. Cl. 228—28 **10 Claims**

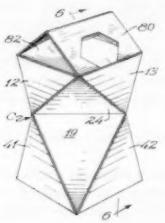
1. An oscillator for a welding tool comprising: means for holding a welding tool for application to work; means mount-

ing said holding means for reciprocal movement; means for reciprocating said holding means on said mounting means; and control means for said reciprocating means including means for adjusting the length of each reciprocal stroke; means for adjusting the speed of reciprocation; and means for providing a predetermined, adjustable dwell of said holding means at each end of a stroke; said means for reciprocating



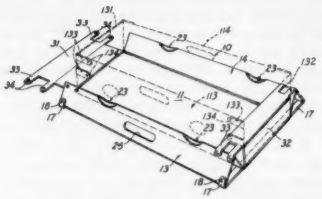
said holding means including a fluid operated cylinder having a piston operatively connected to said mounting means; and said stroke length adjusting means including a pair of control valves for said cylinder, said control valves being movable toward and away from each other and engageable by one of said cylinder piston, said mounting means and said holding means.

3,844,470
DISPOSABLE TRASH RECEPTACLE
John J. Rohde, Salisbury, N.C., assignor to Hoerner Waldorf Corporation, Saint Paul, Minn.
Filed June 18, 1973, Ser. No. 370,803
Int. Cl. B65d *5/00*
U.S. Cl. 229—22 **8 Claims**



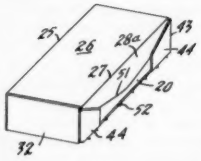
1. A blank for forming a receptacle including:
four similar diamond-shaped panel portions each, including upper and lower isosceles triangular portions connected along an intermediate fold line,
four upper intermediate isosceles triangular panels connecting the equal length edges of said upper isosceles triangular portions of said diamond-shaped panel portions along fold lines,
four lower intermediate isosceles triangular panels connecting the equal length edges of said lower isosceles triangular portions of said diamond-shaped panel portions along fold lines,
the third edges of said four upper intermediate isosceles triangular panels terminating on a common plane,
the third edges of said lower intermediate isosceles triangular panels terminating in a common plane parallel to said first common plane and parallel to the intermediate fold line, and
closure flaps hingedly secured to said third edges of said lower intermediate isosceles triangular panels.

3,844,471
SUPPORT MEANS
Hobart M. Hind, 2325 Radium Spring, Albany, Ga. 31701
Filed Aug. 23, 1972, Ser. No. 283,095
Int. Cl. A47d *7/02*; **B65d** *5/20*
U.S. Cl. 229—30 **4 Claims**



1. A support for use in controlling movement of supported objects comprising, in combination:
a. a surface constructed to provide an area on which objects can be supported;
b. restraining means provided on at least one lateral edge of said surface for movement between a collapsed position substantially coplanar with said surface to a raised position projecting above and at an oblique angle with said surface and comprising a first stiffened flap connected to and along said one lateral edge so as to hinge upwardly with respect thereto and a second stiffened flap hingedly connected to and along said first flap; and
c. holding means detachably joining said surface and said restraining means second flap for releasably holding said first flap in said raised position above and at an oblique angle with surface, said holding means underlying said first and second flaps to hold a free edge of said second flap to said surface so as to be operable for releasably holding said first and second flaps in an angularly adjusted position relative to each other and relative to said surface whereby said restraining means will prevent unwanted movement of supported objects off of said surface in the direction of said lateral edge.

3,844,472
TAMPERPROOF RECLOSABLE CARTON
David Charles Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.
Filed Mar. 14, 1973, Ser. No. 341,317
Int. Cl. B65d *5/54, 5/70, 17/00*
U.S. Cl. 229—51 TC **5 Claims**



1. In a paperboard carton including hingedly connected receptacle front, bottom, rear and cover panels and having cover end wall panels and a cover front panel hingedly connected to said cover panel, glue flaps hingedly connected to said rear panel, and receptacle end wall panels hingedly connected to said bottom panel, said cover end wall panels, said glue flaps and said receptacle end wall panels being adhered together into a unified end wall construction at each end of the carton,

a tamperproof carton opening and reclosure construction comprising

a. a front corner flap hingedly attached to the forward side edge of each of said receptacle end wall panels, said corner flaps being in overlying but unadhered relationship to respective end portions of said front panel, and

b. an extension tab hingedly connected to a side edge of each front corner flap, said extension tabs being adhered to said bottom panel adjacent the hinge connection between said bottom panel and said front panel,

c. said cover front panel being divided by a pair of transverse weakness lines into an upper section adjacent said cover panel, a central detachable section and a lower section, the combined width of said upper section and said central section being equal to the height of said receptacle front panel,

d. said lower section of said cover front panel being in overlying, adhered relationship to said extension tabs and to a portion of said bottom panel between said extension tabs and adjacent the hinge connection between said bottom panel and said front panel,

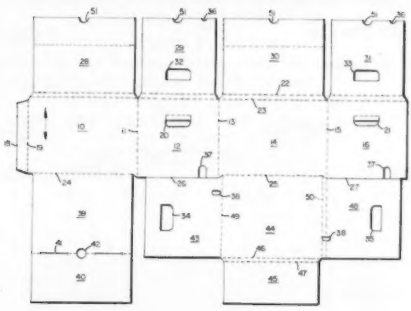
e. said upper section of said cover front panel being adapted, after removal of said detachable central section, to tuck between the outer surface of the carton front panel and the overlying, but unadhered front corner flaps, thereby effecting a reclosure of the carton.

3,844,473

RETURNABLE BEVERAGE CASE

Kenneth M. Whelan, Meriden, Conn., assignor to Westvaco Corporation, New York, N.Y.

Filed Sept. 6, 1973, Ser. No. 394,834
Int. Cl. B65d *5/26*
U.S. Cl. 229—34 R **4 Claims**



1. A returnable beverage case folded from a single blank of corrugated paperboard and having an open top comprising:

a. a pair of primary side walls and a pair of primary end walls connected together at their adjacent edges and formed into a rectangle with the side walls and end walls respectively opposite one another;

b. a pair of secondary side walls folded to lie adjacent the primary side walls to form two-ply side walls;

c. a pair of secondary end walls and a pair of third end walls folded to lie adjacent the primary end walls to form three-ply end walls; and,

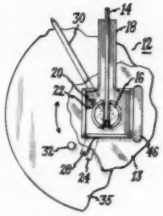
d. a three-ply bottom wall consisting of a full-sized primary bottom wall and a full-sized third bottom wall folded to lie adjacent one another with a pair of abbreviated secondary bottom flaps foldably attached to said primary and third bottom walls respectively and folded to lie intermediate the primary and third bottom walls with their free edges in abutting relation.

3,844,474

SPRING LOADED RESET MECHANISM FOR A DEMAND METER

Alexander M. McQuarrie, and Donald M. Ham, both of Rochester, N.H., assignors to General Electric Company, New York, N.Y.

Filed May 31, 1973, Ser. No. 365,553
Int. Cl. G01r *19/16*
U.S. Cl. 235—144 MA **5 Claims**



1. A demand meter of the type having a demand register disposed inside a housing, the register being provided with a rotatable demand indicator reset arm with one end adjacent a portion of said housing and mechanically engaging a reset actuator for transferring a reset torque applied outside said housing to said reset arm inside said housing, the improvement comprising said reset actuator, said reset actuator comprising:

a. a torque shaft passing through said housing for transmitting torque therethrough;

b. a bearing, mounted to said housing, for rotatably supporting said torque shaft;

c. a first arm rigidly mounted in an angular relation to said torque shaft near the inner end of and at the longitudinal axis of said torque shaft;

d. a second arm rotatably mounted in an angular relation near the inner end of said torque shaft, being urged against said first arm by spring means, said second arm being operable to cooperate with the demand indicator reset arm to reset same such that torque applied to said reset arm is limited by said spring means when the combination of said torque shaft and said first arm that is rigidly attached to said torque shaft is rotated through a predetermined angle; and

e. means for applying a torque to said torque shaft external of said housing wherein torque applied to said torque shaft in excess of that required to rotate said torque shaft and said first arm combination through said predetermined angle is reacted against said housing.

3,844,475

ENVIRONMENTAL CONDITION CONTROL

Albert O. Kesterson; Frederick N. Lancia, both of Columbus, and Ralph C. Liebert, Worthington, all of Ohio, assignors to Liebert Corp., Columbus, Ohio

Filed Apr. 20, 1972, Ser. No. 245,789
Int. Cl. G05b *11/18*
U.S. Cl. 236—1 E **9 Claims**

1. A system for controlling the air condition of a closed environment, a plurality of apparatus for restoring the air condition upon variation either above or below a predetermined condition;

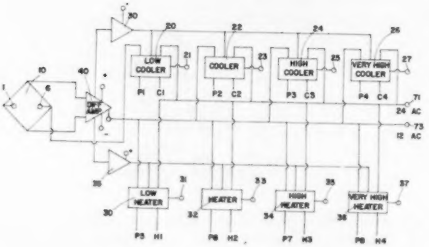
a sensing circuit responsive to deviations above or below said predetermined condition;

at least two solidstate control circuits connected to said sensing circuit,

means associated with each of said apparatus for providing a potential when a predetermined threshold level is exceeded,

means also associated with each of said apparatus connected to a respective one of said threshold level means maintained quiescent in the absence of said potential and activated by said potential applied thereto; and

triac switching means in turn activated by said last named means including a lamp and a photo conductor connected between said triac and said means for providing a potential, wherein current passing through said lamp causes the same to glow and thereby dropping the resistance of said photo conductor;



means for connecting said control circuits to respective apparatus for restoration of said air condition above or below said predetermined condition;

said apparatus responsive in sequence to the degree of variation above or below said predetermined condition thereby actuating in sequence one or more of said apparatus; and

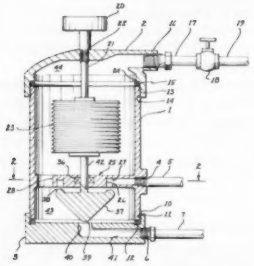
means for indicating which of said apparatus is being actuated.

3,844,476

THERMALLY CONTROLLED WATER REGULATOR

Russell C. Bales, Sr., 1419 S. 29th Ave., Phoenix, Ariz. 85009

Filed Oct. 15, 1973, Ser. No. 406,242
Int. Cl. G05d *23/13*
U.S. Cl. 236—12 R **3 Claims**



1. A water temperature regulator connected to a hot water pipe and a cold water pipe for maintaining a constant temperature water outflow through a discharge outlet, said regulator comprising:

a. a housing including a first and a second chamber, said first chamber being connected to the hot water and cold water pipes for receiving and mixing a flow of hot and cold water, said second chamber being connected to the discharge outlet for discharging the mixed hot and cold water, said housing further including an apertured gate disposed intermediate said first and second housing for providing a passageway from said first chamber to said second chamber;

b. a downwardly opening circular recess disposed within one wall of said first chamber, said circular recess being in communication with the cold water pipe;

c. an upwardly directed aperture in communication with the hot water pipe and disposed within another wall of said first chamber, said aperture being in axial alignment with said circular recess;

d. flow regulating means adapted for reciprocal movement intermediate said circular recess and said aperture for selectively regulating the flow of cold and hot water into said first chamber, said flow regulating means comprising:

1. an inverted cone-shaped valve having an apex and a base;

2. said apex being positionable within said aperture to prevent further water flow therethrough; and

3. an annular ridge extending upwardly from said base for selectively sealingly engaging said recess;

e. a bellows disposed within said second chamber, said bellows being connected to said valve for positioning of said valve intermediate said aperture and said recess in response to the water temperature within said second chamber;

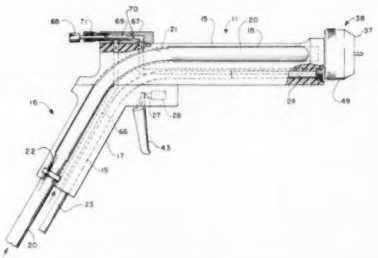
f. adjustment means connected to said bellows for biasing said valve toward said recess or said aperture to restrict the flow of cold and hot water, respectively, into said first chamber; whereby, said adjustment means establishes the initial temperature of the water flowing through said second chamber and said bellows maintains the water temperature constant by operating said valve to regulate the flow of water from the hot water and cold water pipes.

3,844,477

ELECTROSTATIC POWDER SPRAY GUN

Kenneth E. Pollard; Richard O. Probst, both of Indianapolis, and Frank R. Stockton, Brownsburg, all of Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Division of Ser. No. 199,856, Nov. 18, 1971, Pat. No. 3,777,981. This application May 18, 1973, Ser. No. 361,793
Int. Cl. B05b *5/00*; F23d *11/28*
U.S. Cl. 239—15 **5 Claims**

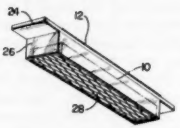


1. An electrostatic powder spray gun for easily and conveniently accomplishing switching from spraying powder of one color to spraying powder of another color without harmfully contaminating the subsequently sprayed powder with previously sprayed powder, the spray gun comprising a barrel including means for electrically charging the coating material sprayed from the gun and a handle projecting at an angle from the barrel, a channel provided in the side of the barrel and handle and traversing the length of each, a spray-forming nozzle carried at the front of the barrel and an elongated feed tube adapted to have one end connected to a powder reservoir, the feed tube capable of being inserted into the channel and retained in the channel at the front of the gun by the spray-forming nozzle and at the rear of the gun by means on the tube cooperating with the handle so as to prevent harmful movement thereof and being in communication with the spray-forming nozzle when retained in the channel.

3,844,478
DEODORANT STRUCTURE

Jeffrey L. Davis, 1205 Kelley St. S.W., Vienna, Va. 22180

Filed Dec. 29, 1972, Ser. No. 319,870
Int. Cl. A24f *25/00*; A61l *9/04*
U.S. Cl. 239—57 **5 Claims**

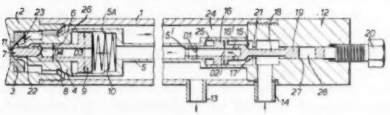


1. Deodorant structure comprising: a block of deodorizing material, said block being of a nature to slowly release vapors for the purpose of masking or neutralizing objectionable odors in a confined space such as a room; a multiple layer on a surface portion of said block including an adhesive layer for affixing said block to a structure surface and a barrier structure attached to said block surface portion interposed between said block and said adhesive layer, said barrier structure comprising a thin plate of rigid platic, having at least one of its length and width dimensions greater than those of said block, and adhesive layer having a length dimension less than that of said plate and formed centrally thereupon whereby non-adhesive layered grasping edges are provided on said plate to readily facilitate affixing of said deodorant structure to a structure surface; and protective means over at least said adhesive layer, for guarding said layer when said structure is not in use, said protective means being removable from said adhesive layer whereby said deodorant structure may be attached to a structure surface by means of said adhesive layer when said deodorant structure is to be used.

3,844,479
FLUID INJECTOR

Arthur Michael Needham, Nailsea, England, assignor to Tectron Engineering Limited, Bristol, England

Filed Nov. 28, 1973, Ser. No. 419,721
Claims priority, application Great Britain, Nov. 30, 1972, 55345/72
Int. Cl. B05b *1/34*
U.S. Cl. 239—125 **13 Claims**

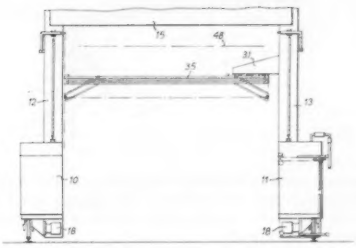


1. A fluid injector comprising a fluid discharge passage; a tip sealing valve for controlling fluid discharge through said passage; first and second ports for connection to a fluid delivery and a return circuit external of the injector; a first fluid path from said first port to the vicinity of said passage, a second fluid path from said vicinity of the passage to said second port, and a spill valve in said first fluid path; said spill valve and said sealing valve being arranged such that with fluid delivered to said first port only said spill valve is subjected to a fluid differential pressure to open said spill valve to permit the fluid to be delivered along said first path to said vicinity of the passage; and said sealing valve is subjected to a fluid differential pressure to close said passage; whereby the fluid returns via said second path to said second port, and with the fluid delivered to said second port only said tip valve is subjected to a fluid differential pressure to open said passage; and said spill valve is subjected to a fluid differential pressure tending to close said first path to thereby promote discharge through said passage; and means for adjusting said spill valve to permit a proportion of the fluid supplied to said second port to return along said first path to said return circuit; thereby controlling the proportion of the fluid supplied to said second port which is discharged through said passage.

3,844,480
CAR WASHING MACHINE

John Edward Taylor, Frimley, and Roger Sean Fitzpatrick, Taunton, both of England, assignors to Ultrasonic Machines Limited, Buckinghamshire, England

Filed Aug. 28, 1973, Ser. No. 392,327
Claims priority, application Great Britain, Sept. 7, 1972, 41673/72
Int. Cl. B05b *3/18*
U.S. Cl. 239—186 **10 Claims**



1. A vehicle washing machine comprising a frame for straddling a vehicle to be washed, two sets of spray nozzles, each set being vertically spaced and carried by the frame and directed inwardly towards each other, a third set of spray nozzles horizontally-spaced and carried by the frame and directed downwardly and extending between said two sets of vertically spaced spray nozzles, means coupled to said third set of nozzles for traversing the third set of nozzles upwards and downwards in the plane of the frame, means coupled to said third set of nozzles for swivelling the nozzles about a horizontal axis to direct them to either side of the general plane of the frame, means coupled to said third set of nozzles for shifting the third set of nozzles in the general direction of their spacing from each other during the swivelling of the nozzles, whereby the positions of the nozzles of the third set when swivelled to be directed to one side of the general plane of the frame are laterally staggered from their positions when swivelled to be directed to the other side of said plane, and means coupled to all of said nozzles for supplying liquid under pressure to the nozzles.

3,844,481
POWERED MOBILE SPRAY IRRIGATION FOR PRODUCTIVE CROP SEWAGE UTILIZATION

David P. Livingston, R.R. No. 2, Washington, Iowa 52353

Filed Jan. 22, 1971, Ser. No. 108,932
Int. Cl. B05b *1/20, 3/00*
U.S. Cl. 239—177 **17 Claims**

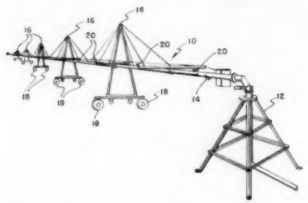
1. Means for sewage disposal comprising:

a. an area of land to be irrigated

b. sprinkler means on said area of land, said area of land being too large to be covered by said sprinkler means in a single stationary position

c. said sprinkler means being a mobile, self-propelled, automatic, rotary irrigation rig including a pivot tower, a

conduit pivoting about said pivot tower, a series of supports spaced along the length of said conduit, and a series of nozzle means spaced along said conduit, said supports each including traction and support means such as wheel means and having power means connected to said traction and support means operative to continuously power said sprinkler means and said sprinkler means being operative to irrigate said area of land unattended by an operator during a cycle in which said conduit continuously, pivotally moves so that said nozzle means move in arcs to gradually and progressively irrigate adjacent circular sectors of said area until all of said area has been covered, said nozzle means being set to sprinkle progressively more sewage in series out from said pivot tower so that all of said area receives about the same amount of irrigation d. a source of sewage components in liquid form capable of being pumped



e. pump means connected to said source and to said pivot tower and operative to pump said sewage components from said source to said sprinkler means to irrigate said area of land thereby

f. control means for said pump and sprinkler means set to deliver said sewage components to said sprinkler means, to sprinkle said sewage components from said sprinkler means, and to move said sprinkler means at rates preventing puddling on said land avoiding puddles in which putrescence can occur and in which bacterial activity can occur in puddle conditions as distinguished from in-soil conditions, and

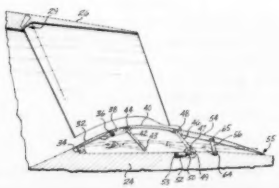
g. freezing configuration means for each nozzle means including upper nozzle outlet means on top of said freezing configuration, and each nozzle means including a lower outlet means in said conduit below said upper outlet means from which said nozzle means depends in said freezing configuration so as to drain said conduit and nozzle means against freezing in freezing conditions after a sprinkling cycle has been completed.

3,844,482

VARIABLE RAMP EXHAUST NOZZLE AND CLAMSHELL REVERSER

Gabriel E. Stearns, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 1, 1973, Ser. No. 365,933
Int. Cl. F02k 1/12
U.S. Cl. 239—265.37 **5 Claims**



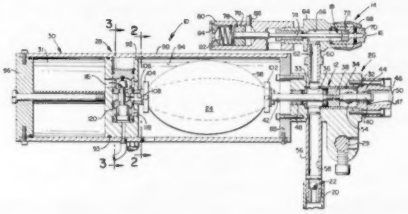
1. Apparatus for varying the exhaust nozzle exit area of a jet engine mounted in an aircraft overwing nacelle installation so as to form a D-shaped exhaust nozzle, and for reversing its forward thrust; comprising: a clamshell panel forming the upper aft portion of the exhaust nozzle and being mounted for rotation about an axis transverse to the engine thrust line; a ramp comprising panel segments extending fore and aft of the nozzle exit and forming the lower flat surface of the D shaped exhaust nozzle; first means for raising and lowering the panel segments of the ramp to vary the exhaust nozzle area; a blocker panel comprising the trailing edge segment of the ramp and being actuated jointly with forward panel segments by said first means for varying the exhaust nozzle area; second means for rotating said blocker panel to a raised position independently of the actuation by said first means; and said second means jointly rotating the clamshell panel rearwardly and downwardly about the transverse axis toward the ramp and rotating the blocker panel upwardly and forwardly from the lower flat ramp surface to an abutment relation with the aft edge of the clamshell panel so as to cooperate in forming a double deflecting clamshell blocker door arrangement for tilting the thrust vector forward for thrust reversal.

3,844,483

SPRAY COATING APPARATUS

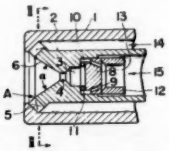
John C. Gray, Harvard, Mass., assignor to Trish Energetics, Inc., Harvard, Mass.

Filed June 14, 1973, Ser. No. 369,947
Int. Cl. B05b 1/32
U.S. Cl. 239—322 **20 Claims**



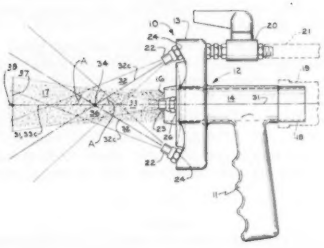
1. A spray coating apparatus comprising a pump assembly including means defining a pump chamber and a pump piston supported in said chamber for movement in one and an opposite direction therein to vary the volume of said pump chamber, a nozzle assembly including a nozzle defining a point of emission for a stream of coherent fluent material, a nozzle valve movable between open and closed positions relative to said nozzle, said nozzle valve in said open position permitting discharge of fluent material from said point of emission and in said closed position preventing discharge of material therefrom, means defining an inlet passageway communicating with said pump assembly for connection to a source of fluent material to provide a material flow path from the source to said pump chamber, a check valve associated with said inlet passageway for permitting material to flow from the source to said pump chamber and preventing retrograde flow of material from said pump chamber to the source, means defining an outlet passageway communicating with said pump assembly and said nozzle assembly for providing a material flow path from said pump chamber to said point of emission, a pneumatic fluid pressure responsive actuator comprising a hollow flexible thin-walled shell defining a pneumatic chamber of variable volume and having generally axially opposed end portions, one of said end portions being secured in fixed position relative to said pump chamber defining means, the other of said end portions being attached to said pump piston, said end portions being movable generally toward and away from each other in response to variation of pneumatic fluid pressure in said pneumatic chamber, said actuator being operable to move said pump piston in one direction to reduce the volume of said pump chamber, and means for controlling the operation of said actuator.

3,844,484
METHOD OF FUEL ATOMIZATION AND A FUEL ATOMIZER NOZZLE THEREFOR
Tadahisa Masai, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 231,702, March 3, 1972. This application Nov. 21, 1973, Ser. No. 418,777
Claims priority, application Japan, Mar. 3, 1971, 46-10653
Int. Cl. B05b 7/10
U.S. Cl. 239—404 9 Claims



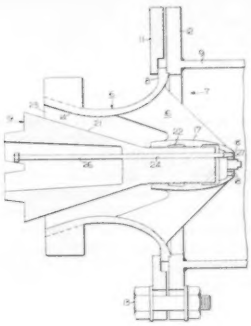
1. A fuel atomizer nozzle, comprising: a liquid fuel passage, fuel whirling means receiving fuel from said fuel passage and moving the fuel in a whirling pattern about a fuel axis; fuel nozzle means to project the whirling fuel in a conical whirling jet generally in an axial direction with respect to said fuel axis; and gas nozzle means for producing a whirling gas stream downstream of said fuel nozzle means intersecting the whirling fuel jet so that at the points of intersection the gas velocity vector generally forms an angle greater than 90° with the fuel velocity vector.

3,844,485
SPRAY APPARATUS
Robert A. Waggoner, Allen, Ohio, assignor to Hagen Manufacturing Company, Delphos, Ohio
Filed Aug. 10, 1973, Ser. No. 387,263
Int. Cl. B05b 7/08, 1/26
U.S. Cl. 239—420 5 Claims



1. A spray gun for mixing a liquid with a dry material while the dry material is being thrust from the gun, said spray gun comprising
a body,
an elongated dry material bore defined by said body, such bore having a circular dry material outlet orifice, such bore being suitable for supplying dry material for ejection through said orifice, whereby a generally cylindrical dry material stream is ejected,
a plurality of pairs of slotted spray nozzles mounted in said body circumjacent said orifice, each of said spray nozzles having an elongated slot orifice and each of said slot orifices being aligned parallel to a single line extending in a direction normal to the longitudinal centerline of said bore, said nozzles being adapted to eject flat fan-shaped streams of liquid, said nozzles being oriented such that a first of said pairs of nozzles ejects both of its fan-shaped streams in a single plane, said streams of said first pair having centerlines intersecting in a point within said dry material stream, and such that a second of said pairs of nozzles ejects its fanshaped streams convergingly to intersect in a line lying in said single plane and non-coincident with such point,
liquid supply means for supplying a liquid to said plurality of pairs of nozzles, and
valve means in communication with said liquid supply means for regulating the rate of flow of the liquid to said plurality of pairs of nozzles.

3,844,486
LIQUID SPRAY NOZZLE
Willie James Roberson, Cincinnati, Ohio, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 28, 1973, Ser. No. 429,219
Int. Cl. B05b 1/32
U.S. Cl. 239—456 2 Claims



1. A liquid spray nozzle comprising: a hollow body internally contoured to provide a discharge opening at one end thereof; a plurality of ribs connected to said body and extending inwardly therefrom and supporting an internally threaded hub; an adjustable head having one threaded end adjustably threadably supported in said hub with the other end thereof extending into said discharge opening and being externally contoured to provide an annular opening therebetween, said head being adjustable in said hub to vary the size of said annular opening; a plurality of circumferentially spaced threaded bores in said hub radially spaced from end concentrically located about the axis of the threaded portion of said hub; walls defining an axially extending opening through said head radially spaced from the axis thereof and selectively alignable with said threaded bores; and an elongated rod having one threaded end extending through said axially extending opening and engaged in one of said bores to prohibit relative rotation between said body and said head.

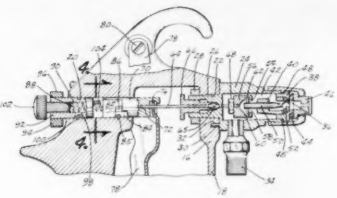
3,844,487
AIRLESS SPRAY GUN
Jerry P. Malec, 5108 N. 85th St., Omaha, Nebr. 68134
Division of Ser. No. 219,699, Jan. 21, 1972, Pat. No. 3,780,953. This application Apr. 27, 1973, Ser. No. 355,299
Int. Cl. B05b 1/32
U.S. Cl. 239—526 5 Claims

1. An airless spray gun comprising,
a gun body,
a valve means on said gun body for controlling the flow of spray fluid,
a trigger pivotally secured to said gun body,
connecting means connecting said trigger and said valve means for controlling said valve means, said trigger being

movable from a first position wherein said valve means is closed to a second position wherein said valve means is open,

said valve means comprises a valve seat and a valve member movable into seating engagement with said valve seat,

said connecting means comprising a first elongated connecting element operatively secured at one end to said trigger for movement therewith, a connector secured to the other end of said first connecting element, and a valve rod, having opposite ends, detachably secured at one end to said connector, said valve member being mounted on the other end of valve rod,



said valve seat comprising a support having an opening extending therethrough, said opening being defined by first and second wall portions being angularly disposed with respect to each other, an annular seat portion at the intersection of said wall portions, said annular seat portion being angularly disposed with respect to said first and second wall portions, said valve member being a valve ball, said annular seat portion being tangent to that portion of the exterior surface of said valve ball which engages said seat portion.

3,844,488

APPARATUS FOR PULPING AND GRADING OF WASTE PAPER

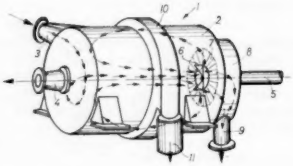
Walter Neitzel, Varel, Germany, assignor to J. M. Voith GmbH, Heidenheim, Germany

Filed July 27, 1972, Ser. No. 275,830

Claims priority, application Germany, Aug. 12, 1971, 2140372

Int. Cl. B02c *13/02*

U.S. Cl. 241—43 **17 Claims**



1. In an apparatus for the comminution and grading of waste material, particularly for the pulping and grading of waste paper, a combination comprising container means for accommodating a suspension of waste material; means for comminuting at least part of said waste material in said container means so as to obtain an impurity component of low specific gravity, a stock component and an additional component of high specific gravity, said comminuting means causing accumulation of said impurity component in a portion of said container means spaced from said comminuting means; outlet means for discharge of said stock component from said container means; discharging means in the region of said portion for discharging said impurity component from said container means; a substantially annular recess in said container means for accumulation of said additional component; and additional outlet means communicating with said recess for removal of said additional component therefrom.

3,844,489

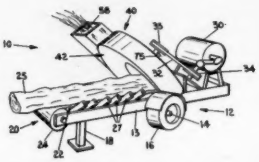
WOOD CHIPPING APPARATUS

Donald E. Strong, R.F.D. No. 1, Box 110, Remus, Mich. 49340

Filed Aug. 24, 1972, Ser. No. 283,312

Int. Cl. B02c *18/06*

U.S. Cl. 241—55 **14 Claims**



1. A chipper apparatus for chipping material comprising:

An elongated rectangular chipper block having front and rear surfaces and substantially flat edges extending along said block, said block including at least one knife receiving chip slot extending through said block between said front and rear surfaces;

a cutter knife positioned within said aperture and including a cutting edge extending from the front surface of said block;

a pair of fan blades oppositely and fixedly positioned on said edges extending outwardly from the rear surface of said chipper block and extending longitudinally along a portion of the length of said block;

a housing shaped to enclose said chipper block and including front and rear surfaces and a wall extending therebetween, said front surface having a material receiving aperture therein; said housing including a chipper exhaust chute extending from said wall and spaced from said receiving aperture;

means for rotatably positioning said chipper block within said housing to position said chipper block such that as it rotates, said chipper knife periodically passes adjacent the receiving aperture;

means for supporting material fed into said aperture; and

drive means for rotatably driving said chipper block whereby material fed into said aperture is reduced to chips which are exhausted from said discharge chute.

3,844,490

APPARATUS FOR DISPERSING FINELY DIVIDED SOLID PARTICLES IN A LIQUID VEHICLE

George R. Schold, 7909 2nd St., North, St. Petersburg, Fla. 33702, and James D. Fischbeck, Burbank, Ill., assignors to George R. Schold, St. Petersburg, Fla., a part interest

Filed Dec. 6, 1972, Ser. No. 312,655

Int. Cl. B02c *17/16*

U.S. Cl. 241—74 **5 Claims**

1. Apparatus for deagglomerating and dispersing solid particles held in agglomerated form and carried in suspension in a liquid vehicle by the action of a dispersing media on the solids comprising:

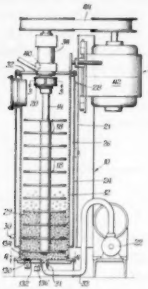
a mixing vessel having a fluid inlet at one end thereof and a fluid outlet at the other end thereof, said vessel being adapted to have a charge of dispersing media introduced therein, said inlet also being adapted to be operatively connected to means for introducing a fluid mixture into said inlet under pressure and moving said fluid mixture through said inlet, and through the dispersing media to said outlet;

a rotatable shaft extending into said vessel and adapted to be driven from a power source;

agitating means operatively associated with said shaft within said vessel for agitating the dispersing media;

a separator for separating dispersing media from the fluid mixture, said separator being operatively associated with said shaft and closely adjacent thereto and disposed in the path of flow between said vessel inlet and outlet;

means defining inlet means and outlet means in said separator, said separator outlet means being in fluid communication with said vessel outlet;



said separator including a plurality of removable screen segments attached to said separator and surrounding the outside thereof;

retaining means on said separator for holding the screen segments in a continuous annular arrangement about said separator; and

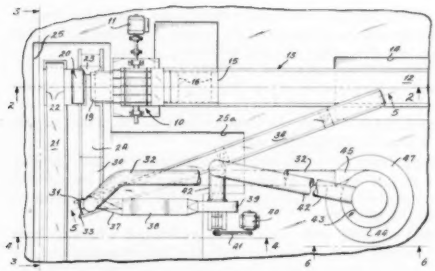
opening means in said vessel wall defining a hand hole of sufficient size to provide access to said separator and said removable screen elements to permit removal of the latter from said separator.

3,844,491

MATERIAL RECLAIMING AND CLASSIFYING APPARATUS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., Inc., St. Louis, Mo.

Filed Dec. 20, 1972, Ser. No. 316,768
Int. Cl. B02c *21/00*
U.S. Cl. 241—80 **2 Claims**



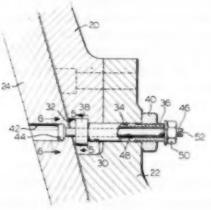
1. Waste material classifying apparatus which comprises a shredder to which the waste material is fed, means adjacent said shredder to receive and vibratorially initiate separation of the shredded waste material, magnetic separator means adjacent said vibratorial means to separate shredded magnetic waste from shredded non-magnetic waste, a generally vertical air chute open at the top and bottom and having a feed opening between said top and bottom openings, first conveyor mean extending from adjacent said magnetic separator means to a connection with said chute feed opening to deliver shredded non-magnetic waste into said chute, second conveyor means having a receiving end adjacent said chute bottom opening and a delivery end connected into the feed to said shredder, a forced air circulation system connected between said chute top opening and back to said chute between said bottom and feed openings, said circulation system including a cyclone separator to receive and collect waste material floated out of said chute top opening and a blower to extract clean air from said cyclone and deliver the air into said chute, said blower delivering the clean air at a velocity to force air borne waste material from said chute into said cyclone for separation in said cyclone and said second conveyor collecting the waste material falling out of said cute bottom opening and returning it to said shredder for further shredding, and means connected to said cyclone to receive waste material separated from the air moved in said circulation system by said blower.

3,844,492

GRINDING MILL BOLTED CONSTRUCTION

Robert Edwards Smallwood, Pointe Claire, Quebec, and Marvin Bruce Shaver, Beaconsfield, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Continuation-in-part of Ser. No. 216,471, Jan. 10, 1972, abandoned. This application Aug. 24, 1973, Ser. No. 391,302
Int. Cl. B02c *17/22*
U.S. Cl. 241—182 **3 Claims**



1. A grinding mill hollow drum structure having at least three layers of plate in overlying substantially sandwiched relation, with an inner, an intermediate and an outer plate member, said inner and said intermediate plates abutting at an interface, each said plate having a plurality of spaced holes therein in aligned relation with corresponding holes in the other plates, including a recess at said interface, fastening means securing the plates together, comprising hollow bolt means having a head portion secured in said interface recess and a tensioning head portion accessible from outside the drum for releasably securing said intermediate and outer members in mutual pressing relation, and inner bolt means withdrawable through said hollow bolt means having an outer tensioning head portion accessible from outside the drum to draw said inner plate towards said intermediate plate, being releasable from without the drum whereby said inner plate may be withdrawn within the drum while maintaining the other said plates in secured relation.

3,844,493

REFUSE TREATMENT APPARATUS

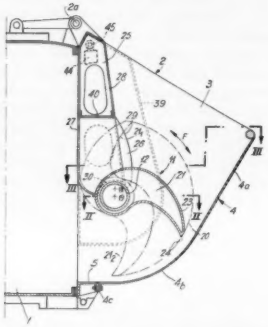
Claude Lucien Demenais, Breuillet, France, assignor to Societe Industrielle De Transports Automobiles S.I.T.A., Paris, France

Filed Mar. 7, 1973, Ser. No. 338,932

Claims priority, application France, Mar. 9, 1972, 72.08189; Mar. 9, 1972, 72.08190

Int. Cl. B02c *18/04*

U.S. Cl. 241—190 7 Claims



1. Refuse loading apparatus intended for connection with a refuse collecting vessel comprising an upwardly splaying out hopper having a bottom, substantially in the shape of a cylindrical sector, and a communication opening with said vessel at the level of said bottom; a shaft pivotally carried in parallel relationship with the axis of said cylindrical sector carrying a plurality of evenly spaced claw-like teeth each with convex and concave surfaces, said shaft being rotatable and said teeth being reciprocable between an upper position in which said teeth clear said opening and a lower position in which the concavity of said claw-like teeth face said opening, the gap between said bottom and the portion of circle described by the tip of each tooth during pivotal movement of said shaft decreasing towards said opening, and driving means for pivotally reciprocating said shaft providing a driving force which increases during the stroke between upper and lower positions of the teeth.

3,844,494

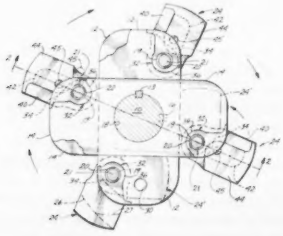
HAMMER MILL ROTOR ASSEMBLY

William G. Hightower, Upland, Calif., assignor to Ferromet, Inc., Etiwanda, Calif.

Filed Feb. 1, 1973, Ser. No. 328,841

Int. Cl. B02c *3/04*, *13/28*

U.S. Cl. 241—197 4 Claims



1. In a hammer mill having a rotatable shaft, the improvement comprising an elongated rotor arm mounted on the shaft to extend radially from the shaft and rotate with it, a hammer disposed adjacent the outer end of the arm, means for securing the hammer to the arm so the hammer projects beyond the outer end of the arm and ahead of the leading edge of the arm when the shaft is rotated, the hammer including separate head and body portions which overlap in the direction of shaft rotation and each have collinear holes extending through them in the direction substantially parallel to the axis of shaft rotation, and a retaining pin extending through the collinear holes in the overlapping portions of the hammer head and body to secure them together, the pin being positioned so that when the shaft is rotated the pin is prevented from movement along its axis by the adjacent motor arms between which the hammer is secured, the location of the retaining pin with respect to the pivot point for the hammer being such that when the shaft does not rotate and the hammer is rotated about its pivot point, the pin moves clear of the rotor arms so it can be moved longitudinally to permit the hammer head to be removed from the hammer body.

3,844,495

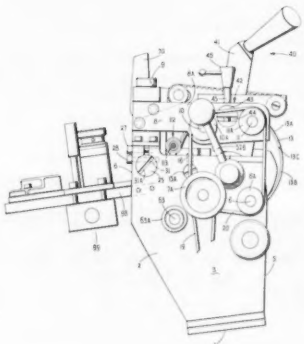
TOROIDAL WINDING MACHINE

Kenneth P. Gorman, 480 S. Main St., Randolph, Mass. 02368

Continuation-in-part of Ser. No. 131,935, April 7, 1971, Pat. No. 3,764,082. This application Feb. 9, 1973, Ser. No. 330,973

Int. Cl. H01f *7/06*, *41/08*

U.S. Cl. 242—4 B 7 Claims



1. In a machine for winding toroids with elongated lengths of material carried by an annular shuttle, means for pulling out wire taps during the winding operation comprising;

a member having a wire engaging end,

means for pivotally supporting said member so as to permit said wire engaging end to swing in an arc,

said supporting means disposed out of the plane of but adjacent the annular shuttle,

means secured to said member for selective manual pivoting of said member to direct the wire engaging end of said member into the plane of the shuttle and in engagement with the wire,

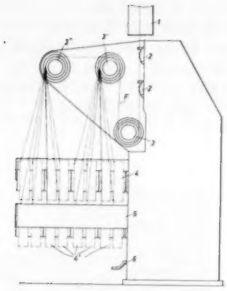
said member and toroid being positioned whereby upon engagement of the wire with the wire engaging end the pulling force of the wire causes the member to pivot so that the wire engaging end moves out of the plane of the shuttle,

and means engaging the pulled tap of wire when the manual pivoting means withdraws the wire engaging end away from the plane of the shuttle for disengaging the wire from the wire engaging end.

3,844,496
SPINNING APPARATUS WITH MEANS FOR WINDING UP THE FILAMENTS

Horst Rothert, Berlin, Germany, assignor to Karl Fischer Apparate-und Rohleitungsbau, Berlin-Borsigwalde, Germany

Continuation of Ser. No. 585,589, Oct. 10, 1966, abandoned. This application June 2, 1969, Ser. No. 833,859
Claims priority, application Italy, Oct. 27, 1965, 23660/65; Germany, Aug. 2, 1966, 49853
Int. Cl. B65h *54/20*
U.S. Cl. 242—35.5 R **1 Claim**

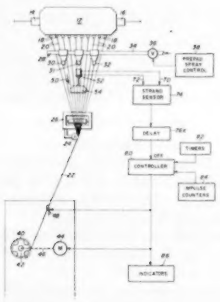


1. In a spinning apparatus of the type composed of a plurality of adjacent units, a unit comprising a spinning head having at least one row of spinning nozzles, a shaft leading downwardly from said row, godet cylinders mounted below said shaft for rotation about horizontal axes extending parallel to said row, reels for winding up the filaments issuing from said nozzles and traversing said godet cylinders and extending from there to said reels, and means for driving said reels; said godet cylinders including one lower cylinder disposed on a lower level and at least two upper cylinders disposed on a higher level, said reels including groups of coaxial reels, each group being disposed below one of said upper godet cylinders.

3,844,497
STRAND SENSOR FOR AUTOMATIC KNOCK-OFF DEVICE

Joseph M. Harrill; Thomas C. Baugham, both of Shelby, and Eugene Pruitt, Bessemer City, all of N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 2, 1973, Ser. No. 320,379
Int. Cl. B65h *63/00*
U.S. Cl. 242—36 **16 Claims**

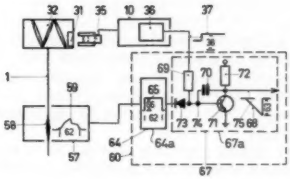


1. In a system for forming a plurality of filaments from a heat softened material including: means for attenuating said filaments; means for gathering said filaments into strand; means for winding said strand, said means for winding and said means for attenuating providing motion to said filaments and the strand associated therewith, said motion of said filaments causing air currents; the improvement comprising a movable sensing means adjacent to said filaments, positioned in the path of movement of said air currents and movably responsive to variations in said air currents; and control circuit means responsive to the movement of said sensing means when said air currents fall below a predetermined value to stop said means for winding and attenuating said filaments and the strand associated therewith.

3,844,498
APPARATUS FOR EVALUATING THE WINDING SPEED OF CROSS-WINDERS

Erich Loepfe, Zollikerberg, Switzerland, assignor to Aktiengesellschaft Gebruder Loepfe, Wetzikon, Switzerland

Division of Ser. No. 143,776, May 17, 1971, Pat. No. 3,774,860. This application July 19, 1973, Ser. No. 380,688
Claims priority, application Switzerland, May 28, 1970, 8012/70
Int. Cl. B65h *63/00*
U.S. Cl. 242—36 **5 Claims**



1. Equipment for use on a cross-winding machine provided with at least one winding unit embodying a wind-up bobbin for receiving a traveling yarn drawn from a yarn supply position, and means for driving such wind-up bobbin, the equipment comprising, in combination;

a speed evaluation apparatus cooperating with said winding unit of the cross-winding machine, said evaluation apparatus comprising electromagnetic pulse generator means cooperating with said winding unit of the cross-winding machine for generating pulses indicating the rotational speed of the wind-up bobbin, an electronic pulse space-evaluation circuit arrangement operatively coupled with said pulse generator means, the pulses generated by said pulse generator means being delivered to said electronic pulse space-evaluation circuit arrangement, said pulse space-evaluation circuit arrangement containing a circuit for generating sawtooth voltages, the amplitude of which is proportional to the spacing in time of each two successive pulses, said pulse space-evaluation circuit arrangement further containing circuit means operatively coupled with said circuit for generating sawtooth voltages, said circuit means generating a step-shaped output signal, the height of whose last step indicates the momentary rotational speed of said wind-up bobbin;

a yarn cleaning device having means for scanning the traveling yarn, a thickness measuring channel, and an adjustable length measuring channel, both said channels being operatively coupled to the output of the scanning means for generating yarn thickness and yarn defect length indicating signals, respectively; and circuit means operatively coupled to the pulse space-evaluation circuit arrangement and to said adjustable length measuring channel whereby said step-shaped output signal adjusts the sensitivity of said length measuring channel and, therefore, the yarn defect length indicating signals.

3,844,499

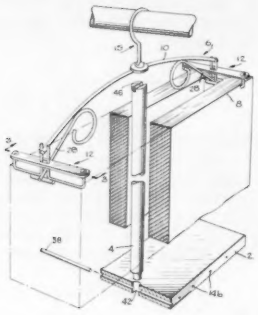
HANGER FOR FABRIC AND SUPPORTING ASSEMBLY THEREFOR

Milton Berkowitz, 500 E. 85th St., New York, N.Y. 10028

Division of Ser. No. 104,362, Jan. 6, 1971, abandoned. This application Mar. 8, 1973, Ser. No. 339,160

Int. Cl. B65h *75/02*

U.S. Cl. 242—55 **2 Claims**



1. A combination comprising,

an elongate hanger member,

two fabric supports secured to opposite ends of said hanger member, each said fabric support including,

two generally horizontal arms extending transversely on opposite sides of said hanger member, each said arm having an upwardly directed pointed pin at its outer extremity,

a vertical support releasably attached at its upper end to said hanger member and positioned generally centrally between said pins, and

a piece length of fabric, said piece length of fabric being wound in successive loops around said fabric supports with an upper selvedge edge of the fabric being forced over each of said pins in sequence and onto the adjacent arm thereby forming said piece length of fabric into a pendent roll secured to and extending downwardly from said fabric supports and at least partially enclosing said vertical support.

3,844,500

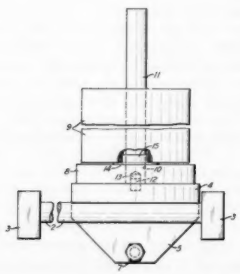
SUPPORT FOR ROLL OF PAPER AND OTHER ARTICLES

Richard P. Krause, 1503 Highland Ave., New Castle, Pa. 16101

Filed May 2, 1973, Ser. No. 356,613

Int. Cl. A47k *10/24*

U.S. Cl. 242—55.54 **4 Claims**



1. An article support comprising a shelf having front and rear ends and adapted to rest on a horizontal bar spaced from a wall to which its ends are attached, a vertical stabilizing member extending downwardly from the rear end of the shelf for insertion between such a bar and wall, an adjusting screw extending rearwardly through said stabilizing member and projecting from its back for engagement with the wall to hold the shelf horizontal, retaining means projecting upwardly from the top of the shelf, a portable carrier base resting on the shelf and normally engaged by said retaining means to prevent lateral movement of said base on the shelf, and a vertical post extending upwardly from said base, the carrier base being adapted to support a roll of paper encircling said post.

3,844,501

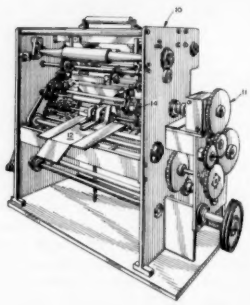
MACHINE AND METHOD FOR WINDING

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Oct. 12, 1972, Ser. No. 296,960

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 A **14 Claims**



1. In a web winding machine, a frame, a turret rotatably mounted on said frame and equipped with a plurality of rotatable arbor means, means for rotating said turret to move each arbor means sequentially between a transfer station and a winding station, feed roll means rotatably mounted on said frame adjacent to said transfer station but spaced therefrom for advancing a web, an auxiliary roll rotatably mounted on said frame between said feed roll means and transfer station, oscillating roll means on said frame including first and second rolls for redirecting the path of travel of said web between said feed roll means and arbor means in said transfer station while maintaining substantially constant the length of web therebetween, means for moving said oscillating roll means between a first position of partially wrapping said auxiliary roll with the advancing web by means of said first roll and a second position to unwrap said auxiliary roll by said first roll and to form a nip with said arbor means in said transfer station, by means of said second roll of said oscillating roll means, and means operably associated with said frame for severing said web and urging the advancing severed edge of said web into said nip.

3,844,502

APPARATUS FOR CONTROLLING THE WINDING OF WEB MATERIAL ON A DYE BEAM

Paul Charles Toy, Jr., Exeter, R.I., assignor to Marshall and Williams Company, Providence, R.I.

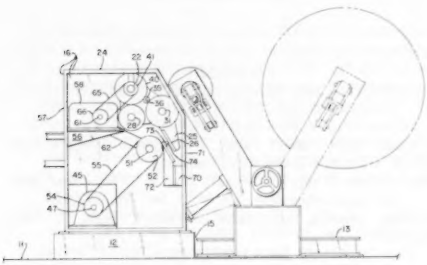
Filed Feb. 12, 1973, Ser. No. 331,466

Int. Cl. B65h *17/02, 23/00*

U.S. Cl. 242—67.1 R **3 Claims**

1. Apparatus for controlling the winding of web material on a dye beam comprising a platform, a pair of beam arms comprising a right side beam arm, and a left side beam arm, means pivotally connecting said right and said left beam arms to said platform at, respectively, one end thereof, a pair of clutch

elements comprising a chuck shaft rotatably mounted in said right side beam arm, a movable chuck plate fastened to said chuck shaft, a shaft rotatably mounted in said left side beam arm, a non-sliding chuck plate fastened to said shaft opposite to and aligned with said movable chuck plate, to provide means to removably support a dye beam therebetween, independent drive means rotatably connected to one of said pair of clutch elements to provide means to rotate a dye beam, doffing means for moving one of said pair of clutch elements toward and away from the other of said pair of clutch elements, a pair of stands positioned adjacent, respectively, said pair of beam arms, a pair of pivot sensing arms, means pivotally mounting said pair of pivot sensing arms, respectively, in said pair of stands, a nip roll rotatably supported on opposite ends in said pair of pivot sensing arms, a pair of load cells, one for each of said pair of pivot sensing arms, means fastening said pair of load cells, respectively, to said pair of stands, whereby, contact of said nip roll with a dye beam causes said pair of sensing arms to actuate said pair of load cells, in direct relation, to the increase in diameter of a dye beam, a beam



positioning cylinder, having a piston, means fastening said cylinder in a stationary position and means pivotally connecting said piston to said pair of beam arms, an electro hydraulic closed loop feedback control system with proportional position and load control action containing said load cells, a PH servo amplifier and BLH signal conditioner, a feedback signal voltage conduit between said load cells and servo amplifier and signal conditioner, a voltage load input command means connected to said servo amplifier and signal conditioner, a servo valve, an error signal voltage connection between said servo amplifier and signal conditioner, said feedback signal and said voltage load input command being compared in said servo amplifier and signal conditioner and the difference in voltage passing an electrical impulse signal to said servo valve, a regulated flow conduit between said beam positioning cylinder and said servo valve whereby said servo valve regulates the hydraulic fluid flow to said beam positioning cylinder to move said beam position cylinder piston a selected distance, to vary the distance between said nip roll and a dye beam supported between said pair of beam arms.

3,844,503

TAPE WINDING DEVICE

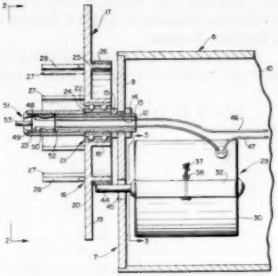
Darwin H. Peterson, 1212 N. 13th St., Boise, Idaho 83702

Filed June 20, 1973, Ser. No. 371,887

Int. Cl. B65h *23/18*

U.S. Cl. 242—67.1 R **6 Claims**

1. A tape winding device comprising a support member, a shaft secured to and projecting from said support member, a reel having a disc-like side including a rear face and a front face, means rotatably mounting said reel on said shaft, an electric motor mounted on said support member and having a driveshaft projecting from the support member, and an



annular flange projecting from said rear face and disposed concentrically around the reel axis and engaging the motor shaft to form a friction drive.

3,844,504

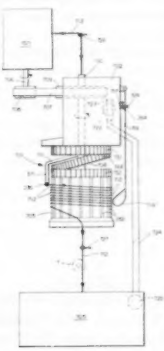
METHOD AND APPARATUS FOR HANDLING YARN

John B. Lawson, Providence, R.I., assignor to Lawson-Hemphill Inc., Central Falls, R.I.

Continuation-in-part of Ser. No. 241,207, April 5, 1972, Pat. No. 3,776,480. This application Mar. 13, 1973, Ser. No. 340,722

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.01 **8 Claims**



1. In a method for handling yarn including the steps of withdrawing yarn from a first process, storing the yarn temporarily by a yarn storage feeder and withdrawing yarn from the yarn storage feeder under a constant tension by a second process, the improvement comprising:

a. withdrawing the yarn from the first process at a selected constant rate by the yarn storage feeder,

b. driving the yarn storage feeder by and in timed relation to the first process,

c. continuously monitoring the quantity of yarn stored by the yarn storage feeder,

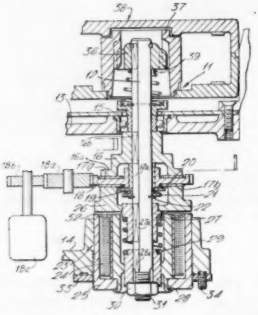
d. reducing the rate of yarn withdrawal by the second process from the yarn storage feeder when the quantity of yarn in storage reaches a pre-determined minimum and

e. increasing the rate of yarn withdrawal by the second process from the yarn storage feeder when the quantity of yarn in storage reaches a pre-determined maximum.

3,844,505
SPOOL MOUNT FOR MAGNETIC TAPE RECORDING AND/OR PLAYBACK MACHINES

Norbert Max Klimek, and Manfred Anton Huber, both of London, England, assignors to English Numbering Machines Limited, London, England

Filed July 3, 1972, Ser. No. 268,856
Claims priority, application Great Britain, Sept. 29, 1971, 45290/71
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—206 16 Claims

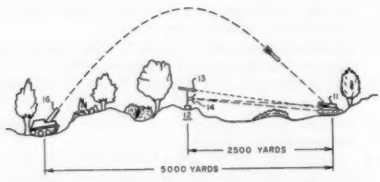


1. A spool mounting device for a tape transport comprising:
A spindle adapted to receive a spool for rotation therewith,
frictional drive transmitting means for transmitting drive in either direction of rotation, said drive transmitting means including a first part comprising a wheel slidably mounted and freely rotatable on said spindle, said wheel having a lining of friction material on one face thereof, and a second part fixed to said spindle for rotation therewith,
driving means connecting said wheel to a motor for driving said wheel in a selected direction of rotation,
resilient biasing means for biasing said wheel into frictional engagement with said second part of said drive transmitting means to transmit drive to said spindle to rotate same in said selected direction of rotation, and
means for selectively disengaging said drive transmitting means against the action of the resilient biasing means to allow said spindle to rotate in eithe direction of rotation while said sheel of said drive transmitting means continues to be rotated in said selected direction of rotation.

3,844,506
MISSILE GUIDANCE SYSTEM

Gus Stavis, Briarcliff Manor, and Thomas W. Odell, Pearl River, both of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Feb. 6, 1961, Ser. No. 87,491
Int. Cl. F42b *15/02*, *15/00*, *15/10*
U.S. Cl. 244—3.15 5 Claims

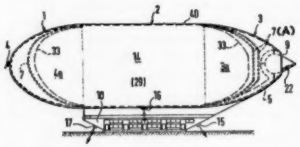


1. A missile guidance system comprising, a missile carrying a microwave receiver and beam antenna, means adapted to fire said missile in the general direction of a target, a stationary microwave transmitter irradiating said target and its vicinity by a single beam, means conically rotating said beam at a first rate about a line joining said transmitter and said target, the conical angle thereof being substantially equal to the beam angular width, means conically rotating the beam direction of said receiver antenna at a second rate whereby at a selected first range said receiver perceives and receives said irradiation reflection modulated at said second rate, means demodulating the received modulation to secure a signal having a frequency determined by said second rate and a phase relative to a datum line on said missile, means steering said missile coarsely toward said target in accordance with the phase of said signal, means in said receiver operative at a selected second range less than said first range for receiving said irradiation reflection and demodulating said first rate modulation thereof to form a second signal having a determinable phase, and means steering said missile in fine guidance mode toward said target in accordance with the phase of said second signal.

3,844,507
PROCESS FOR THE TRANSPORTATION OF IMPELLENT GASES, FOR EXAMPLE NATURAL GAS, AND APPARATUS FOR CARRYING OUT THE PROCESS

Hermann Ernst Robert Papst, 7742 Saints Georgen Karl-Maier Strasse, Schwarzwald, Germany

Continuation of Ser. No. 69,328, Sept. 3, 1970, abandoned.
This application Mar. 19, 1973, Ser. No. 342,545
Claims priority, application Germany, Sept. 9, 1969, 1945608
Int. Cl. B64b *1/02*
U.S. Cl. 244—30 5 Claims

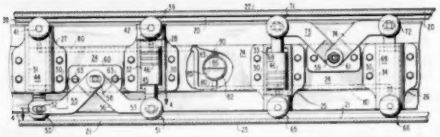


1. A process for the transportation of impellent gases being lighter than air, e.g., natural gas or hydrogen, from a starting point at which the impellent gas is available to a point of consignment, characterized by the steps of:
substantially completely filling a large capacity, light, inflatable hollow body with impellent gas at the starting point, transporting the impellent gas by air with said hollow body to a point of consignment, said hollow body being borne through the air solely by the buoyancy of the impellent gas contained therein,
compeltely discharging the impellent gas at the consignment point, while maintaining said hollow body inflated by supplying said hollow body with heated air as said impellent gas is discharged, so that said hollow body will be borne through the air on its return journey to said starting point solely by the buoyancy of said heated air, maintaining said heated air at an elevated temperature during the return journey, and
discharging said heated air after returning to said starting point so that said hollow body can be filled with more impellent gas at said starting point as heated air is discharged.

3,844,508
HYDRAULIC MECHANISM

Gaspare L. Gioia; Norris H. Switzer, and John K. Willerton, all of Merritt Island, Fla., assignors to Omnionics, Inc., Brevard County, Fla.

Continuation-in-part of Ser. No. 27,359, April 10, 1970, Pat. No. 3,672,608. This application June 26, 1972, Ser. No. 266,104
Int. Cl. B64c *3/54*
U.S. Cl. 244—43 **8 Claims**



1. A hydraulic system for restoring two relatively inclinable bodies to a predetermined angular relationship, comprising

first hydraulic means operable between said bodies, said first hydraulic means having a neutral position and being movable to displaced positions in either direction from the neutral position when subjected to forces thereby permitting relative inclination of the respective bodies, said first hydraulic means having an upper piston movable in an upper cylinder and a lower piston movable in a lower cylinder,

second hydraulic means spaced from the first hydraulic means and being operable between said bodies, said second hydraulic means having a neutral position and being movable to displaced positions in either direction from the neutral position when subjected to forces, said second hydraulic means having an upper piston movable in an upper cylinder and a lower piston movable in a lower cylinder, said first and second hydraulic means being movable in opposite directions from their neutral position when the two bodies are relatively inclined, means hydraulically connecting a first pair of said cylinders which includes the lower cylinder of the second hydraulic means and the upper cylinder of the first hydraulic means, means hydraulically connecting a second pair of said cylinders which includes the upper cylinder of the second hydraulic means and the lower cylinder of the first hydraulic means, and

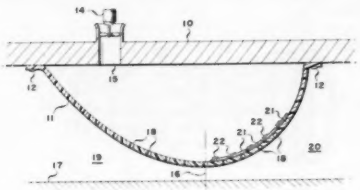
means operable in response to relative inclination of the bodies for restoring the hydraulic means to their neutral positions.

3,844,509
AIR CUSHION TRUNK VALVING SYSTEM FOR AIRCRAFT

Dave H. Jenkins, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Oct. 15, 1973, Ser. No. 406,656
Int. Cl. B60v *3/08*
U.S. Cl. 244—100 A **5 Claims**

1. In an aircraft landing gear system, the combination with an inflatable air cushion trunk mounted on the underside of said aircraft and a source of air under pressure connected to the interior of said trunk for the expansion thereof in an arcuate shape locating the outermost wall of said trunk substantially tangential to a reaction surface during operations of the aircraft in proximity with such surface, of an opening piercing the trunk wall on each side of the point of tangency aforesaid, and a cover normally overlying and closing said opening on the outside of said aircraft with respect to said tangency point, said cover being moved out of the normal position aforesaid

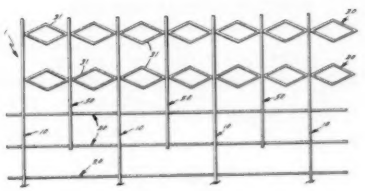


to a position uncovering said outside opening in response to deflection of said outermost trunk wall to a position substantially parallel with said reaction surface.

3,844,510
METHOD AND FABRIC FOR PIPE REINFORCEMENT

Wilbur E. Tolliver, Holland, Mich., assignor to New York Wire Mills Corp., Tonawanda, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,606
Int. Cl. B21f *27/00*
U.S. Cl. 245—1 **36 Claims**



1. In a fabric for reinforcing concrete pipe or the like, said fabric including a plurality of rigidly connected longitudinal and circumferential defining strands, at least one of said circumferential defining strands at the bell-forming end of the fabric being expandable longitudinally of itself, the improvement in said fabric comprising: a plurality of stiffener members interposed between various ones of said longitudinal defining strands and extending generally parallel to said longitudinal defining strands, said stiffener members being generally shorter than said longitudinal defining strands; said stiffener members being rigidly joined to at least one non-longitudinally expandable circumferential defining strand and being rigidly joined to all said longitudinally expandable circumferential strands whereby when said fabric is formed into a cage with an expanded bell, said stiffener members aid in minimizing collapsing of said bell end when weight is placed on a pipe containing such a cage.

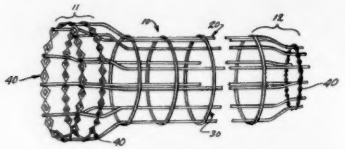
3,844,511
METHOD AND FABRIC FOR PIPE REINFORCEMENT

Wilbur E. Tolliver, Holland, Mich., assignor to New York Wire Mills Corp., Tonawanda, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,510
Int. Cl. B21f *27/20*
U.S. Cl. 245—2 **24 Claims**

1. Fabric for forming concrete pipe reinforcing cages comprising: a network of interconnected separate longitudinal defining strands and separate circumferential defining strands of material suitable for forming a concrete pipe reinforcing cage, said strands defining the separate longitudinal and sepa-

rate circumferential strands respectively of the reinforcing cage when the fabric is formed; and at least one separate end circumferential defining strand joined to said longitudinal defining strands at the female forming end of the fabric which



is independent of said other circumferential defining strands, said one circumferential defining strand comprising a plurality of interconnected closed loops expandable longitudinally of said one strand.

3,844,512

ARRANGEMENT FOR RECORDING PULSES

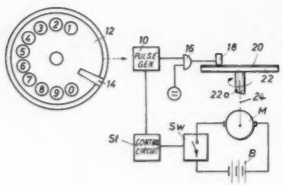
Paul Fahlenberg, Baierbrunn, Germany, assignor to Compur-Werk Gesellschaft m.b.H. & Co., Munich, Germany

Filed June 11, 1973, Ser. No. 368,669

Claims priority, application Germany, June 15, 1972, 22292406

Int. Cl. G01d *15/24*

U.S. Cl. 346—137 **5 Claims**



1. A signal recording arrangement for recording signals from an actuating device which passes through different datum positions, comprising:

electrical signal storage means;

an electric motor for driving said storage means;

pulse generator means responsive to said actuating device for producing electrical pulses or pulse sequences, said pulses being transmitted to said storage means by means of a recording member;

means defining a capacitor charging circuit including a chargeable capacitor and energy source means for energizing said capacitor charging circuit and charging said chargeable capacitor to a fully charged condition prior to the generation of said electrical pulses or pulse sequences;

means defining a discharge circuit for discharging said capacitor, said discharge circuit means being responsive to said electrical pulses or pulse sequences from said pulse generator means to effect a discharge of said capacitor immediately upon receipt;

regenerative bistable circuit means normally in one of two conditions and producing a first output signal in response to a discharge of said capacitor caused by a change of condition of said regenerative bistable circuit means to the other condition, said regenerative bistable circuit means being also responsive to a charging of said capacitor to return said regenerative bistable circuit means to said one condition to effect a generation of a second output signal; and

switching means connected to said motor and adapted to effect a control on the energization of said motor, said switching means being responsive to said first and second output signals from said regenerative bistable circuit means to turn said motor completely on and completely off, the time period for charging said capacitor determining a constant time interval between two different pulses or series of pulses in said storage means.

3,844,513

METHOD AND SYSTEM FOR DETECTING WHEEL FLATS ON RAIL VEHICLES

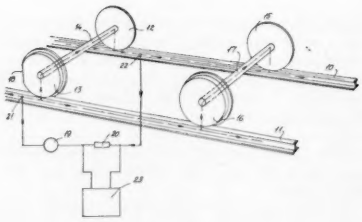
Rune Bernard Bernhardson, Skarholmen; Karl Lennart Lundfeldt, Alusjo, and Karl-Erik Ullerfors, Hagersten, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 135,600, April 20, 1971, abandoned. This application Oct. 2, 1972, Ser. No. 294,251

Claims priority, application Sweden, Apr. 22, 1970, 5547/70

Int. Cl. B61k *9/12*

U.S. Cl. 246—169 R **9 Claims**



1. A method for detecting wheel flats on rail vehicles having wheels made of electrically conductive material and an axle between oppositely situated wheels, comprising the steps of: passing an alternating current having a relatively high frequency through a current circuit which includes a first and a second wheel to be sensed and the axle between said wheels, said first and second wheels being the only wheels in said current circuit wherein a contact point between the peripheral bearing surface of each wheel and the associated rail together with a portion of a first and a second rail forms part of the circuit, and detecting a change of the current amplitude in the current circuit caused by the presence of a wheel flat on at least one of said wheels.

3,844,514

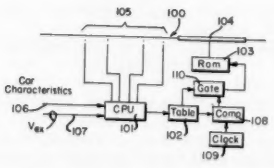
CAR RETARDER CONTROL SYSTEM

John J. DiPaola, Penfield; Charles W. Morse, Rochester, and Richard A. Dobson, Caledonia, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,473

Int. Cl. B61k *7/12*

U.S. Cl. 246—182 A **12 Claims**



1. In a car retarder control system for a railway classification yard having a multi-position car retarder operable to different braking positions as each cut traverses said retarder

for adjusting the speed at which cuts being classified couple on their assigned storage tracks, by reducing the speed of the cut from its entering velocity to a preselected exit velocity, the combination of:

means responsive to the velocity of said cut when entering said retarder and to the preselected exit velocity for said cut for providing a manifestation representative of each braking force to be exerted by the retarder on each cut at each instant of its travel through the retarder to reduce its velocity to said preselected exit velocity at the exit end of the retarder,

means for providing a manifestation related to the position of each cut as it passes through said retarder,

and means responsive to said first recited means and said second recited means for varying the braking force exerted on each cut by said retarder as it passes through the retarder to reduce its velocity to said preselected exit velocity at the exit end of the retarder.

3,844,515

PIPE SUPPORT FOR USE IN A HEATING DEVICE

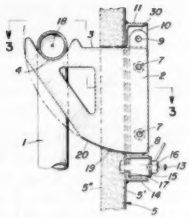
Henricus Joannes Knol, Voorburg, Netherlands, assignor to The Lummus Company, Bloomfield, N.J.

Filed Mar. 7, 1973, Ser. No. 338,889

Claims priority, application Netherlands, Mar. 14, 1972, 7203369

Int. Cl. F22b *37/20*

U.S. Cl. 248—71 **14 Claims**



1. A pipe support for supporting a pipe from underneath in the interior of a heating device defined by walls, in such a way as to permit the removal of the pipe support without interrupting the operation of the heating device, comprising a carrying arm extending in a vertical plane, characterized in that the carrying arm extends through the wall of the heating device by way of an opening therein and is rotatably suspended on a horizontal transverse shaft having an axis, said horizontal transverse shaft being located outside the heating device, the carrying arm being detachably connected to said horizontal transverse shaft, and the carrying arm being blocked against rotation by a releasable latching member outside the heating device.

3,844,516

PUMP STATION TEST STAND ASSEMBLY

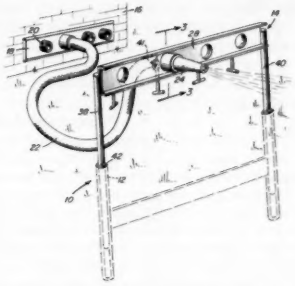
Phillip Klarke, 327 S. Porter St., Michigan City, Ind. 46360

Filed Dec. 7, 1972, Ser. No. 311,730

Int. Cl. B05b *15/06*

U.S. Cl. 248—88 **3 Claims**

1. An assembly for testing a booster pump station or the like, said assembly comprising a stationary mounting base near the pump station and a test stand removably mounted to said base for holding at least one test hose and nozzle in place during tests; said test stand including a pair of substantially rigid, spaced, parallel legs, a transverse support member connected to said legs, and means associated with said support member for selectively securing a test hose and nozzle in place during tests and directing the test nozzle in a direction toward a predetermined test spray area, the securing means including an aperture provided in the support member, said stationary mounting base including a pair of spaced, parallel tubular



members in generally vertical orientation and a transverse plate connecting together the members, portions of said legs extending into said tubular members with the plate normally being arrangeable beneath a support surface into which the members are insertable.

3,844,517

SELF LEVELLING STRUCTURE

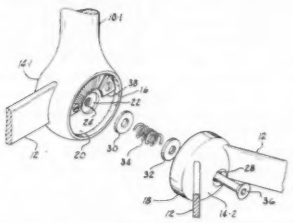
Cyril William Fraser, 23 Victoria Rd., Clifton, Cape Town, Cape Province, South Africa

Filed Jan. 29, 1973, Ser. No. 327,635

Claims priority, application South Africa, Feb. 15, 1972, 72/1005

Int. Cl. A47b *9/16*

U.S. Cl. 248—188.3 **6 Claims**

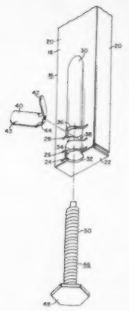


1. A self-adjusting structure which comprises a first part, a second part, the parts having surfaces which face one another, a load bearing support extending upwardly from said first part, ground engaging arm means extending outwardly from each of said parts, means connecting the two parts so that the second part is able to perform both rotary oscillations and tilting movements with respect to the first part, rotary oscillation of the second part causing said surfaces to move across one another and tilting movement of the second part causing a region of said surface of the second part to move towards or away from a region of the surface of the first part, said second part tilting under gravitational force to separate said regions when not held, by an upward force on the arm means projecting therefrom, in the position in which the regions are in close proximity, and locking means carried by each of said regions of the surfaces for co-operation with the locking means of the other surface to prevent rotation of the second part once the second part has tilted to bring said regions into close proximity with one another, said locking means being spaced and inoperative when the second part has tilted to separate said regions.

3,844,518
LEVELING SUPPORT STRUCTURE FOR DISHWASHER

Olan L. Long, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 18, 1973, Ser. No. 352,858
Int. Cl. F16b *41/00*
U.S. Cl. 248—188.4 7 Claims



1. Leveling support structure for a dishwasher or the like comprising:

a leveling screw having a threaded shank portion and an enlarged head portion;

means for threadably engaging said shank portion in a relatively freely rotatable manner permitting screwing said leveling screw within said means; said engaging means defining an aperture having a diameter greater than the outer diameter of said shank portion, said aperture having a first arcuate portion providing thread engaging means; spring means interposed between the shank portion of said screw and a second arcuate portion of said aperture diametrically opposed to said thread engaging means to normally urge said threaded shank portion and said thread engaging means into weight supporting engagement, said spring means comprising a U-shaped leaf spring having a generally arcuate apex disposed between said shank portion and said second arcuate portion of said aperture, said apex having a greater diameter than said second arcuate portion whereby said spring means assumes a first position forcing said shank portion into threaded engagement with said first arcuate area and defining a space between said apex and said second arcuate area; and,

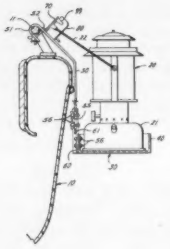
means for manually releasing said shank portion from said spring means permitting relatively free longitudinal axial movement of said leveling screw within said aperture to obtain the desired extension, said releasing means comprising the freely extending ends of said leaf spring for manual movement towards one another to effectively reduce the diameter of said apex to permit said apex to move within said space a distance sufficient to release said threaded engagement of said shank portion whereupon reengagement of said spring means and said shank portion re-establishes said weight supporting engagement.

3,844,519
HOLDER FOR GASOLINE LANTERN

Billy R. Garrett, 5336 Conroy St., Fort Worth, Tex. 76134

Filed Jan. 28, 1974, Ser. No. 436,933
Int. Cl. F16m *13/00*
U.S. Cl. 248—226 R 2 Claims

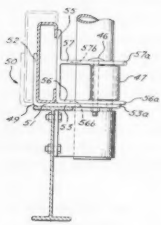
1. In a device for displaying a lighted gasoline latern from a small pleasure boat, usually powered by an outboard engine, having hand rails conveniently located near peripheral edge portions of the boat, the combination of a cylindrical receptacle, comparatively short relative to its diameter, which in use is disposed vertically and has the bottom of a lantern received bodily therein, an elongated metal strip, characterized by its inherent spring tension but soft and easily bent, which has a hook or loop in one of its end portions and in use is secured about a hand rail as described, from which the strip is suspended, the depending end portion of the strip having means removably and adjustably connecting it to the receptacle, to support the receptacle on the hand rail at a predetermined distance below it, and detent means, rigidly and removably connected to an intermediate portion of the strip and adjustable longitudinally relative thereto, for selective engagement by the bail or handle of a lantern having its bottom in place in the receptacle, to prevent accidental displacement thereof.



3,844,520
DEPENDENT TOEBOARD CONSTRUCTION

Richard Lawrence Werner, Sharon; Richard Malvern Montgomery, Transfer, and Martin Peter Ridge, Greenville, all of Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.

Filed July 23, 1973, Ser. No. 381,994
Int. Cl. E04g *3/04*
U.S. Cl. 248—228 18 Claims

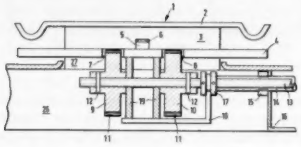


1. A toeboard bracket for mounting a toeboard to a stanchion, said bracket comprising a retainer portion for receiving and supporting a toeboard; yoke means projecting laterally from said retainer portion, said yoke means having a pair of spaced arm means adapted to receive a stanchion therebetween; a clamp bridged across said arm means and adjustable in a direction generally parallel with said arm means whereby to clamp a stanchion between said arm means; and means for releasably securing said clamp to said arm means in any adjusted position whereby said bracket can be firmly secured to a stanchion.

3,844,521
ARTICLE SUPPORTING STRUCTURE

Klaus Berger, Munchen, and Horst Scheunemann, Taufkirchen, both of Germany, assignors to H. Berthold A.G., Taufkirchen, Germany

Filed May 17, 1973, Ser. No. 361,235
Claims priority, application Germany, May 10, 1974, 7218956
Int. Cl. B60n 1/02
U.S. Cl. 248—429 **5 Claims**

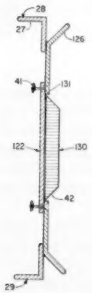


1. An article supporting structure comprising a base, a platform carrier and a platform operatively interrelated so as to provide for horizontal shifting of said platform selectively in the direction of one or the other of two horizontal axes at right angles to each other, a feed screw mechanism mounted on said base in cooperative relation to said platform carrier for shifting the latter along one of said axes, and a friction wheel drive mounted on said carrier frame in underlying cooperative relation to said platform for shifting the latter along the other of said axes; said friction wheel drive comprising a pair of friction wheels, a first shaft mounting said friction wheels coaxially at a fixed spacing from each other and means mounting said first shaft rotatably on said carrier frame, and said feed screw mechanism comprising an externally threaded hollow second shaft surrounding said first shaft, an internally threaded member in cooperative engagement with said externally threaded second shaft; means mounting said externally threaded member on said base; and axial thrust transmitting means rotatably connecting said second shaft with said carrier frame.

3,844,522
CUTOUT FORMS FOR CONCRETE FENCE CONSTRUCTION

Gayle Cochran, 6904 N. Russell Ave., Tex. 79760

Continuation-in-part of Ser. No. 2,897, Jan. 14, 1970, abandoned. This application Aug. 8, 1972, Ser. No. 278,829
Int. Cl. E04g 11/00
U.S. Cl. 249—19 **3 Claims**



1. Apparatus for building a ground supported wall structure, comprised of spaced apart vertically disposed posts having a marginal lower end thereof placed into the ground for supporting said structure; each post having at least one vertically extending outwardly opening cavity formed therein with cavities of adjacent posts being directed toward one another;

a first pair of adjacent spaced apart forms longitudinally aligned in parallel relationship respective of one another, each form having a vertical marginal edge portion affixed to said post so as to provide a panel forming mold which includes said cavities, so that uncured cement can be contained therewithin when poured thereinto;

a second pair of adjacent spaced apart forms disposed in aligned relationship respective of one another and parallel to and superimposed upon said first pair of forms so that uncured cement can be contained therewithin when poured thereinto;

each said form having spaced apart upper and lower longitudinally extending beam members which define the height of said form; an inside member having a longitudinally extending free edge portion which is greater in length than said beam members; said beam members being attached to said inside members with the opposed terminal end portions thereof terminating short of the opposed edge portion of said inside members, thereby leaving said vertical marginal edge portion which is received outwardly of said cavity and in abutting relationship with respect to said post;

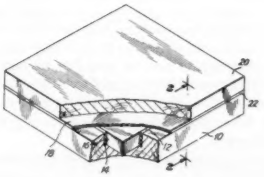
each said inside member is provided with a cut-out; said cut-out being spaced apart from said spaced apart beam members, a removable member having an inside face upon which indicia has been formed; means affixing said removable member to said inside member, so that; pairs of opposed forms may be arranged with the indicia facing towards each opposed panel, thereby enabling the indicia to be transferred to the uncured cement;

adjacent opposed vertical free edge portions of each said inside member being spaced apart from one another a smaller distance relative to said adjacent spaced apart beam members so that complementary superimposed beam members bear against one another while adjacent said longitudinally extending free edge portions are spaced apart sufficiently to enable insulation to be placed therebetween so that when the uncured cement hardens, concrete slabs are formed which are removably captured within the cavities of the post, with each of the slabs being insulated from one another.

3,844,523
MOLD HAVING A BREATHABLE RELEASE SHEET ACROSS THE TOP

Martin J. Wilheim, 52 Elm Ave., Lurchmont, N.Y. 10538

Continuation of Ser. No. 101,823, Dec. 28, 1970, abandoned. This application July 6, 1973, Ser. No. 377,116
Int. Cl. B28b 7/36
U.S. Cl. 425—113 **8 Claims**



1. Mold for casting foamed urethane plastics material for foam plastics articles having at least one generally flat surface and being fully finished on all sides comprising, in combination, a mold box having a generally flat upper surface provided with a recess extending downwardly through said surface to define a generally open and unobstructed aperture in said flat upper surface and a cavity contoured to define the article to

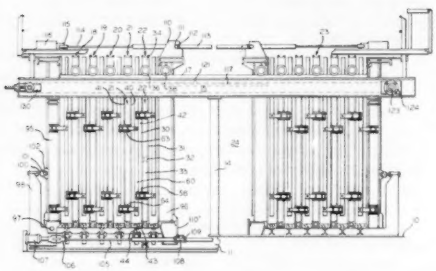
be molded and a generally flat lid extending across said aperture for containing the plastics material within said cavity during foaming and rise thereof together with a breathable release sheet extending across said aperture and across said cavity beneath said lid closing said cavity to fully define the article to be molded, said breathable release sheet consisting of a layered structure comprising, in turn, a self-supporting paper support later having sufficient strength and rigidity to be self-supporting across said aperture without sagging into said cavity or wrinkling during rise of such plastics material and exhibiting sufficient gas porosity to enable complete venting of such cavity through said release sheet outwardly between said mold box and said lid during foaming of urethane plastics material deposited therein in an uncreamed state while precluding exudation of such material therethrough and a release material layer coated to at least the surface thereof toward said mold box to prevent adherence to such foam, so that the gas porosity of said sheet is substantially unencumbered by said release coating, to enable the production of a finished flat surface thereagainst accurately reproducing the texture of said release sheet without flaws or voids caused by trapped air, wrinkles, and the like.

3,844,524

CONCRETE MOLDING MACHINE

Howard M. Fisher; Bernd G. Albers, and Joseph J. Luczak, all of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1972, Ser. No. 301,964
Int. Cl. B28b 7/24
U.S. Cl. 249—120 **21 Claims**



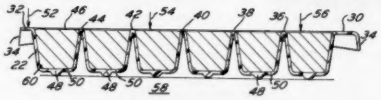
1. a concrete molding machine comprising:
a. a stationary vertically disposed end panel,
b. a movable vertically disposed end panel spaced from the stationary panel and in substantial parallelism therewith,
c. a group of vertically disposed movable mold panels intermediate said stationary and movable end panels,
d. means supporting each of said intermediate panels and said movable end panel for horizontal bidirectional translation whereby to permit said last named panels to be separated from each other and to be juxtaposed in spaced relationship to define mold cavities between them,
e. power driven translating means extending along the sides of said panels,
f. translating means engaging means mounted on individual movable panels, respectively, said engaging means each being operable to selectively engage with said translating means, whereby to permit said panels to be moved away from each other individually,
g. said translating means comprising closed loop chain belts each of which has a lug projecting therefrom,
h. said engaging means on the movable panels comprising pin means mounted for being slidably advanced and retracted selectively into and out of the path of said lug means.

3,844,525

ICE CUBE TRAY

George Parmett, Seaford, N.Y., assignor to APL Corporation, Great Neck, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,041
Int. Cl. F25c 1/24
U.S. Cl. 249—127 **4 Claims**



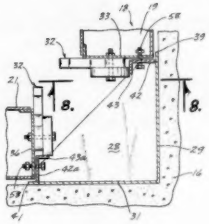
1. A one-piece freezing tray having at least one molding compartment for forming ice cubes, said tray comprised of a flexible material and said compartment having a horizontally disposed mouth at the uppermost end of said compartment, said compartment having a flexible lowermost wall which is substantially planar, said wall being of narrow thickness and having integrally formed in the center thereof a projection depending from the outer surface thereof, said projection being integral with a small area of said lowermost wall and being solid throughout its cross-section, an ice cube formed therein being removable from said compartment by placing said projection against a hard surface and pressing the mouth about said compartment towards said projection to deform said lowermost wall of said compartment and urge said ice cube out of said compartment.

3,844,526

VERTICAL SHAFT FORM WITH CAMMED STRIPPING UNITS

Lyde S. McCracken, Des Moines, Iowa, assignor to Economy Forms Corporation, Des Moines, Iowa

Filed Feb. 15, 1973, Ser. No. 332,681
Int. Cl. B28b 7/16
U.S. Cl. 249—152 **2 Claims**



1. A metal form assembly for constructing a concrete shaft section comprising:
a. an outer form structure,
b. an inner form structure located in a spaced relation within said outer form structure to provide for the pouring of a concrete material therebetween to form said shaft section;
c. said inner form structure including vertically disposed side walls and end walls and a pair of diagonally opposite stripping corner sections, each of which is arranged between the adjacent ends of one of said end walls and one of said side walls, and each of which stripping corner sections has a body member of an angular shape in transverse cross section with vertically disposed side edges,
d. first lateral projections corresponding to and extended inwardly from said one end wall and said one side wall at the ends thereof adjacent a stripping corner section,

e. second lateral projections corresponding to said first lateral projections extended inwardly from the body member of a stripping corner section adjacent a vertically disposed side edge thereof at positions spaced from and opposite said first lateral projections,

f. means movably interconnecting opposite ones of said first and second lateral projections to limit the maximum relation therebetween, and

g. a manually actuated stripping tool unit rotatably mounted on each of said first lateral projections including a spacer member and a cam member, said stripping tool unit rotatable to a concrete pouring position for said inner form structure wherein said spacer member is located between opposite ones of said first and second lateral projections to space said projections apart the maximum distance defined by said interconnecting means, and wherein said cam member is engageable with a corresponding second lateral projection on said body member to move a vertical edge thereof into abutting flush engagement with the adjacent end of a corresponding end wall or side wall,

h. said stripping tool unit, on setting of the formed concrete shaft section, rotatable to an initial stripping position wherein said spacer member is retracted from between opposite ones of said first and second lateral projections, and said cam member is in bearing engagement with a corresponding second lateral projection to concurrently hold a stripping corner section in bearing engagement with the formed shaft section and to force said end walls and side walls out of engagement with the formed shaft section whereby to provide for the movement of the adjacent ends of corresponding end walls and side walls inwardly of the body member of a stripping corner section.

3,844,527

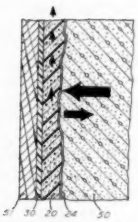
WATER RESERVOIR LINER FOR CONCRETE FORMS

Sam C. Scott, 9015 E. Mansfield, Denver, Colo. 80237

Continuation-in-part of Ser. No. 215,370, Jan. 4, 1972, Pat. No. 3,759,481. This application Sept. 6, 1973, Ser. No. 394,920

Int. Cl. E04g *9/10*

U.S. Cl. 249—189 **7 Claims**



1. In combination with smooth surfaced panels for concrete forms for making structural members, a liner comprising an independently formed sheet of soft, flexible, resilient elastomeric, synthetic polymer having an open cell foam core and front and rear skins of dense, tough, abrasion resistant polymer and at least said front skin containing microscopic pores capable of passing air and water but not the matrix and fines of a concrete mix; said rear skin being smooth and said front skin having a concrete contacting face formed as a negative mold of a desired pattern; said liner being at least about ⅛ inch thick at its thinnest section; said core having a density of about 3–10 pounds per cubic foot, a tensile strength of 40–150 pounds per square foot, a tear strength Die C of 2–30 pounds per linear inch, and the skin has a Shore A hardness of 20–90 and ultimate elongation of 75–200 percent, a tear strength Die C of 50–200 pounds per linear inch, and high abrasion resistance.

3,844,528

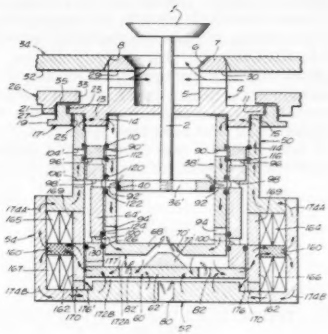
ELECTRICALLY OPERATED HYDRAULIC VALVE PARTICULARLY ADAPTED FOR POLLUTION-FREE ELECTRONICALLY CONTROLLED INTERNAL COMBUSTION ENGINE

Philip E. Massie, Culver, Calif.

Division of Ser. No. 213,881, Dec. 30, 1971, Pat. No. 3,738,337. This application Dec. 15, 1972, Ser. No. 315,638

Int. Cl. F16k *31/06*

U.S. Cl. 251—30 **24 Claims**



1. In an hydraulically operated valve in combination: a cylinder having a piston therein connected to a valve member said piston being reciprocatable between a first position whereat said valve member is positioned in its closed position and a second position whereat said valve member is positioned in its open position; means comprising a valve sleeve member cooperable with said cylinder, said valve sleeve member and cylinder having mutually cooperable porting providing for flow of hydraulic fluid to and from opposite sides of said piston for moving said valve member through its stroke in opposite directions said cylinder having ports for admitting hydraulic fluid to one side of said piston for moving it in one direction and ports for relieving pressure from one side of said piston, said cylinder also having ports for admitting fluid to the opposite side of said piston and ports for withdrawing fluid from the opposite side of said piston, said sleeve member being operative to control all of said ports for causing said piston to reciprocate.

3,844,529

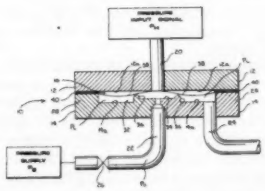
FLUID VALVE HAVING A PRESSURE RESPONSIVE INTERNAL MEMBRANE

Robert O. Brandt, Jr., and George V. Williams, both of Raleigh, N.C., assignors to Brandt Industries, Inc., Raleigh, N.C.

Filed May 11, 1973, Ser. No. 359,533

Int. Cl. F16k *31/145*

U.S. Cl. 251—61.1 **14 Claims**



1. A fluid valve comprising: a valve body having first and second plates secured together in opposed relationship to

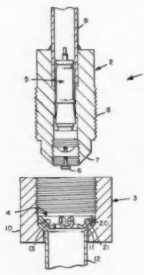
form a chamber therebetween; a pressure supplied inlet opening formed in said first plate and extending therethrough for channeling fluid from a fluid source into said chamber; a pressure supplied exit opening forming in said first plate and extending therethrough whereby fluid from said pressure supply may enter said valve chamber through said inlet opening and may exit through said exit opening; a pressure signal input opening formed within said second plate and extending therethrough; and an imperviable, freely deformable membrane means having geniune membrane characterists interposed between said first and second plates for positively amplifying input pressure signals received through said pressure signal input opening, said positive amplification being accomplished by restricting, but not completely blocking, fluid flow between said inlet an outlet openings in response to increases in pressure of the pressure signal applied to one side of said imperviable membrane means such that a pressure differential exists between said inlet and outlet openings with the higher pressure being a positive amplification of the particular pressure signal applied to said one side of said membrane means.

3,844,530

VALVE FITTING WITH VALVE ACTUATING SEALING MEANS

Albert E. Morrell, 633 Alameda De Las Pulgas, Redwood City, Calif. 94061

Filed Feb. 7, 1973, Ser. No. 330,321
Int. Cl. F16l *37/10, 37/28*
U.S. Cl. 251—149.6 **3 Claims**



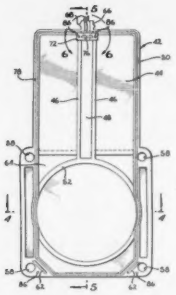
1. A flare fitting assembly comprising:
a first flare fitting;
a second flare fitting;
a resiliently biased valve having a movable valve stem with a free end axially disposed in one of said flare fittings;
a means for coupling together said first and said second flare fittings;
a means removably coupled to said free end of said valve stem for actuating said valve when said first and said second flare fittings are coupled together wherein said valve actuating means comprises a cup-shaped extension for removably receiving said free end of said valve stem and further comprising: a passageway adjacent said cup-shaped extension for providing fluid and gas communication through said valve actuating means wherein said cup-shaped extension is formed for releasably capturing said free end of said movable valve stem for retaining said valve actuating means on said movable stem when said first and said second flare fittings are decoupled.

3,844,531

SLIDE VALVE

Norbert G. Grengs, 5645 Manton Ave., Woodland Hills, Calif. 96059

Filed May 29, 1973, Ser. No. 364,957
Int. Cl. F16k *41/04, 27/10*
U.S. Cl. 251—327 **18 Claims**



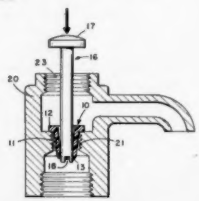
1. In a sliding gate valve of the type having a provision for connecting to a pair of fluid conduits and having a body within which a gate may slide between first and second positions by operation of an actuating rod extending from the body, the improvement comprising a valve body assembleable by ultrasonic welding from first and second body members, an actuating rod coupled to a gate and an O-ring:
each of said body members having first surfaces and being assembleable with said first surfaces in face to face disposition, said first body member having a substantially continuous depression surrounding the area within which the gate will slide and the area through which fluid may flow, said second body member having a substantially continuous raised area mateable with said depression, said raised area having a further protrusion thereon to engage the bottom of said depression and to ultrasonically weld thereto, said first and second body members each having a local relief on said first surface which, when the first and second body members are assembled allows free passage of said actuating rod therethrough, each said relief having thereon a portion of an O-ring groove, said depression and said raised area of said body members each terminating at said O-ring groove, whereby said gate and said actuating rod with an O-ring on said actuating rod may be placed in position between said first and second body members before ultrasonic welding so that said O-ring seals against said body members and said actuating rod after ultrasonically welding of said body members.

3,844,532

VALVE SEAT

Henry M. Buck, 3411 Plumb, Houston, Tex. 77005

Filed June 12, 1972, Ser. No. 261,676
Int. Cl. F16k *31/50*
U.S. Cl. 251—360 **13 Claims**



1. A valve seat for placement by means of a placement tool in the flow passageway bore of a valve housing comprising an

elastic generally cylindrical member having a bore therein and capable of being elongated, reduced in outside diameter and forced into said bore of said valve housing by said placement tool and having an annular flange at one end thereof for seating on the valve housing surrounding said bore of said valve housing, said cylindrical member having an outside diameter slightly larger than the diameter of said bore of said valve housing before said cylindrical member is elongated and placed in said bore of said valve housing; and

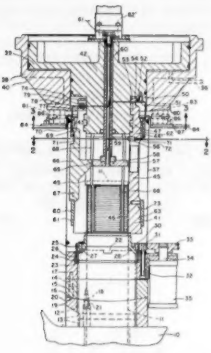
means extending into said bore of said cylindrical member for engagement by said placement tool, said cylindrical member tightly fitting the bore of said valve housing following placement therein.

3,844,533

AUTOMATIC STUD TENSIONER

Jan Markiewicz, North Haven, Conn., and Alfred H. Yoli, New City, N.Y., assignors to Transfer Systems Incorporated, North Haven, Conn.

Filed Mar. 12, 1973, Ser. No. 340,338
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A **20 Claims**



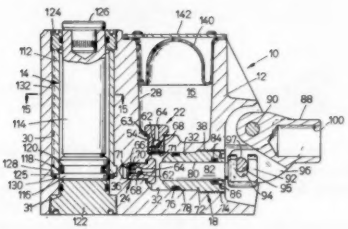
1. Apparatus for tensioning a stud having helical threads for assembly or disassembly of a closure nut engaging said helical threads, comprising a pedestal, hydraulic means comprising a piston and cylinder, one of the piston and cylinder being connected to the pedestal, means for introducing pressurized fluid into the hydraulic means, a puller rod connected to the other of the piston and cylinder and having a threaded section, means for detachably coupling to the stud helical threads above the closure nut, said detachable coupling means comprising plural segments carried by the puller rod and each having a first helical threaded section for engaging the stud helical threads and a second threaded section for threaded engagement with the puller rod threaded section, the segments first threaded sections having a smoothy tapered external surface, means for coupling together the plural segments forcing them to move vertically as a unit, means smoothly effecting threaded engagement between the plural first threaded sections and the stud threads above the closure nut and without rotating the plural segments, said engagement effecting means comprising a smoothly tapered lower annular ring for engagement with the tapered external surface of the segments first threaded sections when moved downward for displacing the plural segments laterally inward and means operative upon a non-threaded-engagement meeting of the segments first threaded sections with the stud threads to cause a small vertical displacement of the plural segments until complete threaded engagement of the segments first threaded sections and the stud threads occurs, said vertical displacement means comprising an upper annular retaining ring for engagement with the segments second threaded sections, means for driving the smoothly tapered lower annular ring downward, and means operative upon downward motion of the lower annular ring to move downward the upper retaining ring into engagement with the segments second threaded sections, said last-named means not being operative to move the upper retaining ring until the lower annular ring has been displaced a certain distance.

3,844,534

LIGHTWEIGHT HYDRAULIC JACK

Donald W. Sessody, Milwaukee, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed June 4, 1973, Ser. No. 366,582
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 H **4 Claims**



1. A hydraulic jack comprising a lightweight cast aluminum housing having a hydraulic liquid reservoir,

an iron sleeve cast into said housing to form an integral part thereof,

a steel plunger mounted for reciprocal motion in said sleeve,

means in said housing for pumping fluid under pressure from said reservoir into the interior of said sleeve and pressure release means for connecting the interior of said sleeve to said reservoir for relieving pressure in the interior of said sleeve,

said sleeve including a shoulder on the outer periphery of the inner end of said sleeve for preventing axial movement of said sleeve in said housing, sealing means located between the inner end of said sleeve and said housing whereby hydraulic fluid under pressure in said sleeve is prevented from flowing between said sleeve and housing and a stop ring threadably engaged in said housing and abutting against the outer end of said sleeve.

3,844,535

PORTABLE ELECTRIC AUTOMOBILE JACK

Joe Dorough, Jr., 3000 W. Irving Blvd., Apt. 422, Austin, Tex. 75060

Continuation-in-part of Ser. No. 841,742, July 15, 1969, Pat. No. 3,606,252. This application Apr. 1, 1971, Ser. No. 130,278. The portion of the term of this patent subsequent to Sept. 19, 1988, has been disclaimed.
Int. Cl. B66f *3/18*
U.S. Cl. 254—103 **6 Claims**

1. A portable electrically operated automobile jack comprising:

A. a base plate adapted to lie securely on the ground and provided with a securing and support well in its upper surface for an upright member;

B. an elongated and vertically positionable lift shaft housing structure having a generally square cross section shape and

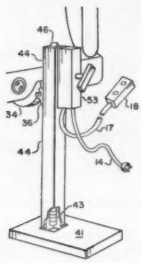
1. adapted to seat in the well provided in the upper surface of the base plate, and

2. being provided with a longitudinal slot - like opening in one face of the housing structure;

C. a rotatable lift shaft vertically positioned within said lift shaft housing having
1. a worm gear surface cut into most of the length of said vertical lift shaft, and
2. at least one support bearing surface to provide support mounting engagement with the bearing provisions in said lift shaft housing;

D. a generally rectangular drive mechanism housing structure mounted on the rear side of the vertically positioned housing for said rotatable lift shaft;

E. a reversable electric drive motor capable of operating from a DC voltage source, such as the battery of the automobile with which the jack is to be used, said motor being mounted inside the drive mechanism housing structure including a power connector cable adapted to connect to a suitable source of electric power;



F. means for turning said electric motor off and on and for controlling the direction of rotation;

G. means for transferring rotational power from the electric motor to said lift shaft including means of reducing the speed and increasing the torque of the rotational power delivered to the jack;

H. brake means for locking said jack when the electric motor is turned off;

I. a lift carriage assembly adapted to ride up or down the worm gear on the lift shaft depending upon the direction of rotation of said shaft;

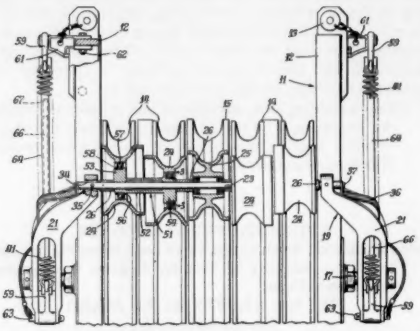
J. a bumper hook attached to said lift carriage assembly and adapted to engage the bumper of an automobile to lift said automobile as required for servicing.

3,844,536
GROUNDING DEVICE FOR MULTI-CONDUCTOR STRINGING BLOCKS

William H. Chadwick, Jr., Rossville, Ga., assignor to Sherman & Reilly, Inc., Chattanooga, Tenn.

Filed Aug. 1, 1973, Ser. No. 384,406
Int. Cl. B65h *59/22*
U.S. Cl. 254—134.3 PA **5 Claims**

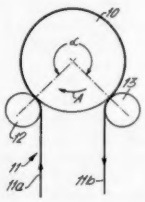
1. In a bundle stringing block having a supporting frame, a plurality of coaxial sheaves for respectively supporting one of a plurality of conductors and a laterally centrally disposed pulling line, and laterally extending shaft means rotatably supporting said sheaves on said frame; a grounding device comprising a pair of roller arms rotatably supported by said frame laterally outwardly of said sheaves, a metal grounding roller centrally aligned radially with each of said sheaves, a roller shaft extending laterally of said rollers and supported by said arms for swinging movements peripherally of said sheaves, resilient means interconnecting said frame and each of said arms to impose a predetermined lifting force on the latter, and eccentric bearing means interposed between said roller shaft and at least two of said conductor sheave grounding rollers for eccentrically mounting each of said rollers relative to each other and relative to the axis of said roller shaft, whereby said rollers are maintained in electrical contact with their associated conductor or pulling line during a stringing operation regardless of variations in tension and resulting angle of tangency with said sheaves individual to said pulling line and said conductors.



3,844,537
CABLE PULLEY

Johannes Rinio, Altenberger-Dom-Strasse, 5074 Odenthal, Germany

Filed July 9, 1973, Ser. No. 377,651
Claims priority, application Germany, July 8, 1972, 2233659; June 5, 1973, 2328474; July 4, 1973, 2334045
Int. Cl. B66d *1/36*
U.S. Cl. 254—191 **19 Claims**



1. A cable pulley for driving a cable of indefinite length, said pulley having a cable groove, in its outer periphery, extending therearound in a generally serpentine path, said pulley comprising two parts each of which has a portion of said groove therein, said parts being relatively rotatable, about their central axis and movable axially relative to each other.

3,844,538
HIGHWAY GUARD TRAP DEVICE

O. R. Colan, 727 N.E. 3rd Ave., Fort Lauderdale, Fla. 33304

Filed May 4, 1973, Ser. No. 357,366
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **4 Claims**

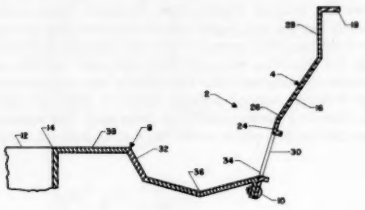
1. A device for arresting a moving vehicle which departs a roadbed comprising:

a tire receiving channel connected along and disposed below the surface of said roadbed, means connected to one end of said tire receiving channel connecting said channel to one side edge of said roadbed;

a vehicle deflecting wall disposed substantially perpendicularly adjacent said roadbed lying parallel to said direction

of said roadbed, said tire receiving channel being disposed between said roadbed and said vehicle deflecting wall; and

an outwardly inclined planar surface connected between said deflecting wall and one side of said tire receiving channel disposed on the opposite side away from said



roadbed, said outwardly inclined planar surface having a lower portion connected to said opposite end of said tire receiving channel and said inclined planar surface having an upper portion disposed parallel to said side edge of said roadbed, said upper portion being connected to said deflecting wall.

3,844,539

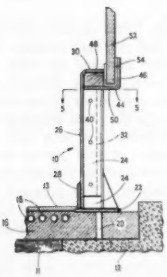
HOCKEY RINK CONSTRUCTION

John Abbott, 416 Grove St., Melrose, Mass. 02176

Filed Mar. 21, 1973, Ser. No. 343,195

Int. Cl. E04h *17/16*

U.S. Cl. 256—24 **4 Claims**



1. A hockey rink board section comprising:

a main wall;

a substantially horizontal and outwardly extending top rail formed integrally and smoothly with said main wall at the upper end of said main wall;

a vertically disposed flange secured to the backsdie of said main wall at each end thereof, each of said flanges being disposed slightly inwardly from the associated end of said main wall thereby to define a vertically extending margin; and

reinforcement means secured integrally to the backside of said board section, and including a horizontally extending rib disposed between said vertical flanges, said rib being disposed above the bottom end of said board section between approximately one-third to one-half of the height of said board section; and

a baseboard secured integrally to the opposite side of said board section and extending along the lower end thereof.

3,844,540

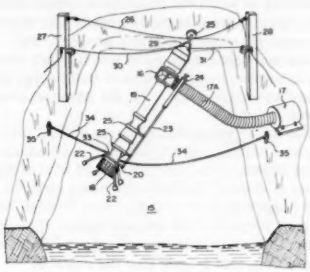
METHOD AND APPARATUS FOR UNCLOGGING FLUID PUMP INTAKES

Louis R. Dobbs, 2414 12th Ave., Canyon, Tex. 79015

Filed Aug. 2, 1972, Ser. No. 277,176

Int. Cl. B01f *5/12*

U.S. Cl. 259—2 **7 Claims**



1. For use with a tailwater pump in an irrigation system having main and lateral distribution lines, a tailwater sump and return line, said pump having an intake and discharge, a tailwater pump intake agitator comprising

a. an agitating water manifold adapted to be secured proximate the pump intake,

b. means adapted to be connected to the discharge side of said pump to supply water from said pump to said manifold,

c. and whipper means connected to said manifold to conduct water from said manifold through said whipper means to cause thewhipper means to flail about the intake of the tailwater pump to break up deposits of silt, trash and the like for movement through the pump for repassage through the return line from the sump to the main distribution lines for recycling through the system.

3,844,541

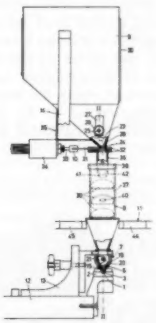
METHOD OF FILLING CIGARETTE FILTERS AND DEVICE FOR CARRYING OUT THE METHOD

Antoine Artho; Pascal Muriset, and Bernard Henzelin, all of Boncourt, Switzerland, assignors to F. J. Burras & Cie, Boncourt, Canton of Berne, Switzerland

Filed Nov. 13, 1972, Ser. No. 306,158

Int. Cl. B01f *15/04, 5/00*

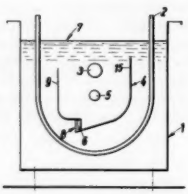
U.S. Cl. 259—4 **14 Claims**



1. A device for filling, with a mixture of fluid products, a chamber contrived between a pair of coaxial cylindrical elements moving along a conduit in a spaced relationship, said device comprising:

a. a plurality of bins, each bin containing fluid products to be mixed, said bins having a discharge outlet;
b. a hopper disposed beneath said bins whereby fluid products discharged from said bins outlet fall freely into said hopper, said hopper also disposed in communication with said conduit, said hopper comprising:
   i. a free-fall zone, initially receiving said fluid products discharged form said bins, in which a homogeneous mixture of said fluid products is formed prior to accumulation thereof at the bottom of said hopper,
   ii. means for mixing said fluid products, and
   iii. suction means disposed in said free-fall zone to create a sub-atmospheric pressure in said hopper and to suck dust upwardly away from the homogeneous mixture; and
c. means for adjusting the discharge of fluid materials from the bins outlet into the hopper, said adjusting means being responsive to a predetermined level of the homogeneous mixture of fluid material piling up in the bottom of said hopper so as to maintain said free-fall zone in said hopper; whereby, with the application of suction in said conduit the homogeneous mixture of fluid products is drawn from said hopper into the chamber.

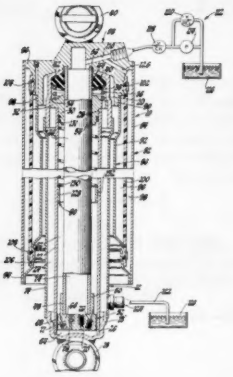
3,844,542
CONTAINERS FOR ELECTROPLATING BATHS
Heinz Strecke, Lindenbaumstrasse 13, 565 Solingen, Germany
Filed May 4, 1972, Ser. No. 250,172
Int. Cl. B01f *9/02*
U.S. Cl. 259—75 **2 Claims**



1. A container and means for oscillating said container, said container being provided with walls having openings for receiving articles to be treated in electroplating baths and being positioned parallel to the plane containing the axis of oscillatory movements, said walls being further provided with at least one saw-toothed projection which projects forward toward one of the circulating directions of the articles, the container walls being asymmetrically shaped relative to the plane containing the axis of movement of the container, oppositely positioned sections of the container walls being positioned parallel to the plane containing the axis of oscillatory movement, said axis being located in the center position of the container, and wherein one section of the walls is higher than the opposite section.

3,844,543
HYDRAULIC LEVELER WITH EXHAUST ONLY HEIGHT CONTROL VALVE
James E. Whelan, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 26, 1973, Ser. No. 335,475
Int. Cl. F16f *5/00*
U.S. Cl. 267—64 **5 Claims**

1. A combination hydraulic shock absorber and leveler unit comprising: a pressure cylinder, piston means located within said cylinder for opposite reciprocation therein, a hollow piston rod connected to said piston having one end thereof extending outwardly of said oil-filled pressure cylinder, means for sealing the outwardly extending end of said piston rod to prevent leakage of fluid from said pressure cylinder, a cap member connected to the outwardly extending end of said piston rod movable therewith, means carried by said movable cap member including an inner and an outer cylinder joined to form a sealed space therebetween, bladder means located within said space for separating said space into a radially inwardly located charged gas chamber and a radially outwardly located rod displacement chamber, first passage means for receiving fluid pumped from an external hydraulic source and for directing pumped fluid into said radially outwardly located rod displacement chamber to vary the pressure in said gas chamber, second passage means in said end cap member for directing pressurized fluid from said first passage means into said hollow piston rod thence to said pressure cylinder to

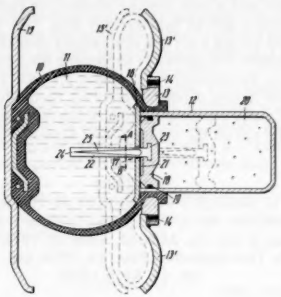


produce an increase force on said piston rod to cause it to move exteriorly of said pressure cylinder, means including the interior of said hollow rod and said first and second passage means serving to communicate said rod displacement chamber with said pressure cylinder to accommodate for changes of rod displacement within said pressure cylinder due to rod movements of said piston rod into and out of said pressure cylinder, valve means in said piston means for producing damping of piston rod movement into and out of said pressure cylinder, means forming a low pressure chamber having an outlet adapted to be connected to an external hydraulic sump, and means responsive to a predetermined movement of said piston rod with respect to said pressure cylinder for communicating said second passage means with said outlet for directly bypassing fluid pumped to said first passage means back to a hydraulic sump to control the outward extension of said piston rod with respect to said pressure cylinder for maintaining a predetermined height relationship in a vehicle leveling system.

3,844,544
HYDRAULIC SHOCK ABSORBER
Friedrich Keilholz, Ennepetal, Germany, assignor to Firma August Bilstein, Ennepetal, Altenvoerde, Germany
Filed Mar. 26, 1973, Ser. No. 344,730
Claims priority, application Germany, Apr. 1, 1972, 2215921
Int. Cl. B60r *19/02*; F16f *9/08*
U.S. Cl. 267—64 R **11 Claims**

1. In a hydraulic shock absorber in which damping fluid is displaced from a flexible impact-receiving container through a fluid passage into a storage chamber for said damping fluid having a separating piston for separating damping fluid entering said storage chamber from a compressible gas within said storage chamber, the improvement comprising a flow control

means disposed in said fluid passage and movable with said separating piston for progressively reducing the rate of passage of damping fluid into said storage chamber as said piston



is moved by said damping fluid into said storage chamber whereby a substantially constant damping effect results in the course of said impact-receiving container receiving an impact.

3,844,545

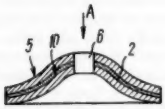
SHOCK-ABSORBING ARTICLE AND A METHOD FOR PRODUCING SAME

Valentin Andreevich Pershin, ulitsa Ju.Gagarina, 6, kv.74; Evgeny Ivanovich Shpadi, ulitsa Vilonovskaya, 13, kv.24; Gennady Vasilievich Lasutkin, ulitsa Pobedy, III, kv.26; Alexei Dmitrievich Pichugin, prospekt K.Marxa, 185a, kv.36, and Vladimir Nikolaevich Trubin, ulitsa Malo Yaroslavskaya, 09, kv.3, all of Kuibyshev, U.S.S.R.

Filed June 5, 1972, Ser. No. 259,814

Int. Cl. F16f *13/00*

U.S. Cl. 267—147 **15 Claims**



1. A shock-absorbing article provided with means for receiving fasteners, wherein said means comprise wire spirals; a wire bunch defined by a bundle of wires and at least one wire wound about said bundle of wires; said spirals being pressed with said wire bunch; said wire spirals being laid uniformly in density both in thickness and over an article area; and said bunch being placed uniformly throughout the area of the article in turns with said turns of the bunch being displaced relative to each other and either of which encompasses in succession said fasteners.

3,844,546

CLAMPING FIXTURE FOR A TUBULAR WORKPIECE

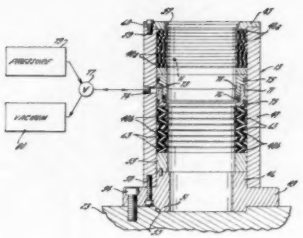
Donald K. Greenberg, Rockford, Ill., assignor to Barnes Drill Co., Rockford, Ill.

Filed Nov. 9, 1973, Ser. No. 414,510

Int. Cl. B23q *3/00*

U.S. Cl. 269—22 **10 Claims**

1. A fixture for holding a tubular workpiece during the performance of a machining operation on the workpiece, said fixture comprising a pair of rigidly supported end members, a first stack of rings backed at its outer end by one of said end members, a second stack of rings backed at its outer end by the other of said end members, said workpiece being telescoped with said rings, said rings being made of resiliently yieldable material capable of expanding radially when compressed axially, means telescoped with said rings and restricting the rings against radial expansion away from said workpiece, and selectively operable means for compressing said rings axially against said end members whereby the rings expand radially toward the workpiece and into gripping engagement with the workpiece, said selectively operable means comprising a fluid operated actuator having a chamber and



having a pair of pistons slidable within and disposed at opposite ends of said chamber, said chamber and pistons being generally annular and being located between the inner ends of said first and second stacks of rings and in coaxial relationship with said rings, and means for selectively admitting pressure fluid into said chamber to shift said pistons axially in opposite directions and thereby compress said rings axially between said pistons and said end members.

3,844,547

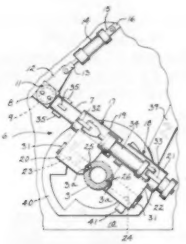
TOOL WRENCH

David M. Lang, South Milwaukee, and Jack D. Nelmark, New Berlin, both of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Jan. 3, 1974, Ser. No. 430,469

Int. Cl. B23q *3/08*; **B25b** *13/50*; **E21b** *3/00*

U.S. Cl. 269—25 **7 Claims**



1. In a tool wrench for holding sections of a drill string of a drilling apparatus, the combination comprising:

a mounting arm pivotably connected at one end to the drilling apparatus and swingable about an axis parallel to a drill string axis of the drilling apparatus;

a pair of chucks slidably attached upon said mounting arm for movement towards and away from each other and adapted to close around a section of a drill string, said chucks being upwardly pivotable about the longitudinal axis of said mounting arm;

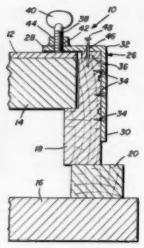
a first hydraulic cylinder pivotal with said mounting arm and having ends each being fixed to one of said chucks for moving said chucks along said mounting arm; and

a second hydraulic cylinder associated with the drilling apparatus and having one end joined to said mounting arm for swinging said mounting arm towards and away from a drill string.

3,844,548
CLAMP FOR HOLDING CUT-OUT PATTERN TO A DOOR UNIT

John L. Rogers, Tunnel Hill, Ga. 30755

Filed Sept. 25, 1973, Ser. No. 400,693
Int. Cl. B25b 5/10, 5/16
U.S. Cl. 269—91 4 Claims

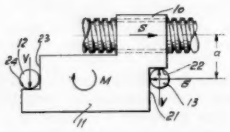


1. A clamp for holding a pattern on a workpiece, comprising, in combination:
   a. a bracket, the bracket being substantially L-shaped and including a pair of longitudinal legs connected together at a vertex and arranged extending perpendicularly from one another;
   b. means for anchoring the bracket relative to a workpiece, the means for anchoring including at least one stud arranged extending perpendicularly from one of the legs and codirectionally with the other of the legs for being inserted into a part of a workpiece for anchoring the bracket to the workpiece;
   c. means for engaging a pattern and holding same on a workpiece; and
   d. an element having a thickness corresponding to the thickness of an article to be clamped bieng attached to the bracket adjacent the vertex of the legs and being arranged for spacing the other of the legs from the workpiece a distance equal to the thickness of the pattern.

3,844,549
MACHINE VISE

Franz Arnold, Spatzenweg 20, 8960 Kempton, Germany

Filed May 22, 1973, Ser. No. 362,782
Claims priority, application Germany, May 25, 1972, 2225474
Int. Cl. B25b 1/10, 1/24
U.S. Cl. 269—247 7 Claims

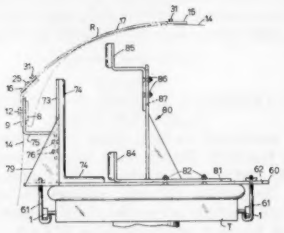


1. A vise, particularly a machine vise, of the kind having a movable clamping jaw and comprising in combination;
   a base plate having a U-profile defining a pair of legs and having two outer guide plates on said legs;
   a row of transverse cross holes in the said legs and support pins insertable in said holes;
   a slide movably guided on said outer guide plates, which slide carries the clamping jaw;
   a spindle which extends in the direction of slide movement and which is disposed above the support pins, the front end of said spindle being supported on the slide;
   a spindle nut having a lower part which extends downwardly between said legs of said base plate, said spindle nut surrounding the spindle and being guided only on the spindle, said spindle nut lower part having a front limiting surface and a rear limiting surface for each abutting a respective one of said support pins, said rear limiting surface having a portion downwardly directed away from the spindle and upwardly supporting the spindle nut rear end on the abutting rear support pin, said front limiting surface having a portion directed upwardly toward the spindle and downwardly restraining the front end of the spindle nut on the abutting front support pin.

3,844,550
PELVIC SUPPORT FOR SURGICAL OPERATIONS

George McGuire, Rt. 3, Orange Ln., DePere, Wis. 54115

Division of Ser. No. 355,034, April 27, 1973, Pat. No. 3,823,709. This application Mar. 14, 1974, Ser. No. 451,166
Int. Cl. A61g 13/00
U.S. Cl. 269—328 7 Claims

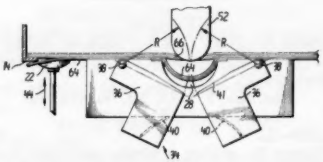


1. A body support for being mounted across an operating table for a patient undergoing surgery, said support comprising a base member mounted on said table, a first brace member secured to said base member and extending upwardly therefrom, a second brace member secured to said base member in transversely spaced relation from said first member and also extending upwardly from said table, said second brace member including a pair of vertically spaced pelvic area holders, means for adjusting one of said braces transversely relative to one another so as to firmly support a patient between said braces when said patient is lying on his side on said table and said holders having an unobstructed space therebetween.

3,844,551
SHEET SHUTTLE FEED

Wilbur J. Morrison, Nazareth, Pa., assignor to Bell and Howell Company, Phillipsburg, N.J.

Continuation-in-part of Ser. No. 296,556, Oct. 11, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,413
Int. Cl. B65h 3/08
U.S. Cl. 271—99 15 Claims



1. A vacuum-type sheet feeding device for feeding the bottom sheet from a stack of flat sheets, said device comprising:
   a movable shuttle plate having a surface on which said stack rests, for gripping said bottom sheet and pulling said

bottom sheet out of said sheet stack, said movable shuttle plate having motion in a direction substantially parallel to the plane of said flat sheets, said surface defining an elongated narrow groove therein which is elongated in a direction parallel to said direction of said shuttle-plate motion, and said narrow groove terminating at a back end thereof so that said back end is closed off and said groove extending to an edge of said shuttle plate at a front end thereof so that said front end is open;

a gate mounted on said shuttle plate for closing off said groove near said front end, but for yielding to allow said bottom sheet to be sucked into said groove; and

a pneumatic-suction means for creating a pneumatic suction in said groove to suck the bottom sheet into said groove;

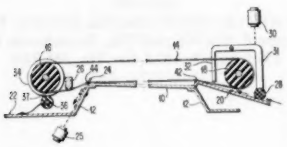
wherein said bottom sheet which is sucked into said groove is thereby adhered to said shuttle plate so that it moves with said shuttle plate.

3,844,552

DOCUMENT FEED DEVICE

Charles D. Bleau; James C. Rogers, and Jesse W. Spears, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1972, Ser. No. 261,884
Int. Cl. B65h *5/02, 9/06*
U.S. Cl. 271—245 **4 Claims**



1. A document feed device for positioning documents on a document plane of an electrophotographic copier comprising:

feed belt means supported by drive means for driving said feed belt means;

a first and second edge means positioned proximate to the inlet edge and exit edge of said document plane;

said belt means wrapping on said first and said second edge means,

said feed belt means, said first and second edge means, and said document glass arranged to define a plurality of regions comprising a first region of positive frictional engagement with a document between said belt means and said first edge means;

a second region of substantially no frictional engagement between said belt means and said document;

a region of increasing frictional engagement between said belt means and said document;

and a further region of positive frictional engagement between said document and said belt together with said second edge means;

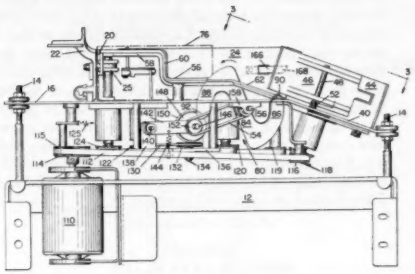
thereby providing a positive input drive into a region of substantially no frictional engagement where the document is inserted into said region of substantially no frictional engagement and is then progressively engaged with a progressively increasing frictional engagement with said belt means and is removed from said document plane by a positive engagement in a second region of positive frictional engagement between said belt and said document to feed, position and remove a document from a document plane.

3,844,553

DOCUMENT SORTING CONTROL MECHANISM

Lester D. Overfield, Kitchener, Ontario, and Louis M. Nagy, Waterloo, Ontario, both of Canada, assignors to The National Cash Register Company of Canada, Limited, Toronto, Ontario, Canada

Filed June 4, 1973, Ser. No. 366,644
Int. Cl. B65h *29/42*
U.S. Cl. 271—179 **7 Claims**



1. Control mechanism for handling documents comprising, means for propelling said documents on edge along a path into a sorting pocket,

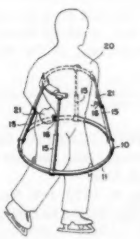
rotatable means positioned adjacent said path for engaging the trailing portion of each document for sideways movement thereof and thereby providing an unobstructed passageway for succeeding documents, said last means comprising a multi-bladed member being arcuately shaped and positioned with the arcuate form in concave manner from the path of said documents and having blade terminal portions extending beyond the center of concavity of said arcuate form and rotatable in a vertical plane angularly disposed from the plane of said propelling path, and means including frictional clutch elements for driving said rotatable means.

3,844,554

DEVICE FOR PROTECTING A SKATER FROM EFFECTS OF SPILL

Roger A. LaMontagne, Montreal, Quebec, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed May 30, 1973, Ser. No. 365,261
Int. Cl. A63b *71/12;* **A41d** *13/00*
U.S. Cl. 272—1 R **1 Claim**



1. A device for protecting a skater from the effects of a fall or spill, said device being adaptable to being hand carried about the exterior body and clothing of the skater and comprising

a continuous circular hoop member joined by longitudinal vertical structural members to an open hoop member of

smaller diameter which is fastened in a plane generally parallel to the plane of the continuous circular hoop member, together with

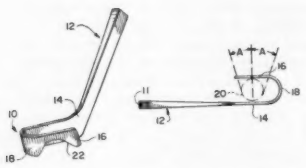
a lateral member mounted on each side of the device to a pair of said vertical structural members in a plane parallel to, and mid-way between the plane of the continuous circular hoop member and the plane of the open hoop member, with the open hoop member being of a size to fit under the armpits and about the back of a wearer, and the continuous circular hoop member being of a size to fit freely about the body of the wearer, with said vertical structural members being of adjustable length, so that the device may be carried by a skater with the open hoop member fitted under his armpits, the continuous circular hoop member located about the mid-section of the body of the skater, and with each hand of the skater grasping a lateral member, in which a hand grip member of resilient composition is fitted on each lateral member, and in which grip member of soft resilient composition is fitted on each side to the open hoop member, adaptable for fitting under the armpit of a wearer.

3,844,555

HOCKEY TYPE BLADE

Daniel R. Tremblay, 8521 d'Artagnan, St-Leonard, Montreal, Quebec, Canada

Filed Apr. 23, 1973, Ser. No. 353,333
Int. Cl. A63b *59/12*
U.S. Cl. 273—67 A **5 Claims**



1. A hockey type blade adapted to be played with a ball, the said blade being characterized by a strip of stiff material forming a horizontally disposed U-shaped enclosure, the said enclosure having a front and a rear vertical flat portions facing each other at a distance slightly greater than the diameter of the ball to be played with and integrally connected to each other by a substantially cylindrical portion having a radius substantially corresponding to the radius of the ball, the said front portion of the blade being provided with a cut-out part located at about the median line of the length of the said front portion and mortising through the lower edge of the said front portion, the said cut-out part having a height smaller than the diameter of the said ball, whereby the said cut-out part facilitates the forward projection of the ball when the blade is tipped backwardly.

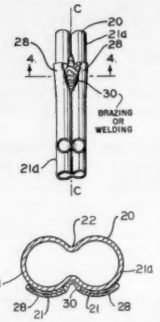
3,844,556

YOKE CONSTRUCTION FOR GAME RACKET

Graham M. Fee, Geneva, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Aug. 6, 1973, Ser. No. 385,715
Int. Cl. A63b *49/12*
U.S. Cl. 273—73 G **8 Claims**

1. In a game racket, a frame comprising a metal tube shaped to form a loop portion and converging throat portion; a handgrip rigid with respect to said throat portion and projecting away from said loop portion; said frame having a neutral plane of minimum stress disposed on the center line of the racket as viewed edgewise of the plane of the loop, and front and back edge portions on either side of said neutral plane subject to maximum compression and elongation stresses in use; a metal yoke disposed across the bottom of and completing said loop, said yoke having a pair of opposite, spaced, bifurcated, elongated end portions overlapping spaced external surface portions of said tubular frame facing inwardly of said loop portion; each of said spaced yoke bifurcated end portions having an elongated notch between the furcated end portions, said



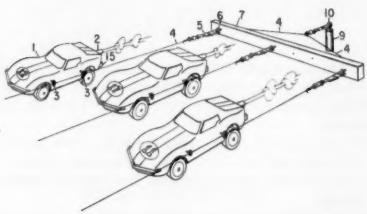
notch being disposed substantially on said center line, each of said elongated, bifurcated end portions being secured to said loop at opposite ends of said yoke by metal heated to a flowable state disposed in each said notch, said yoke being connected substantially in the neutral plane of said racket only, away from said front and back edge portions.

3,844,557

ROCKET MOTOR DRIVEN MODEL RACING VEHICLE

John P. Pompetti, 610 Marshall Rd., Brookhaven, Pa. 19015

Filed Aug. 8, 1973, Ser. No. 386,844
Int. Cl. A63f *9/14*; A63h *17/00*
U.S. Cl. 273—86 R **7 Claims**



1. In a model racing vehicle comprising a vehicle body, front and rear free running wheels supported by said body, said body having a cylindrical reaction engine mount with a rear facing cylindrical orifice into which a model cartridge reaction engine is inserted, means for retaining said engine comprising an internal cylindrical annular section, of lesser overall diameter than the aforementioned cylindrical engine mount, as a forward fixed stop to transfer thrust from the aforementioned model cartridge reaction engine in the forward acceleration mode attained after ignition, and a fixed retaining means extended beyond the rear cylindrical orifice as a rear recoil stop, the aforementioned cylindrical reaction type engine mount having a gas seal forward of the annular cylindrical section, the forward section comprising at least one fourth or more the total length of cylindrical reaction engine mount having a gas seal and being secured to a front bulkhead, said forward section comprising a plenum, said plenum containing a heat absorbing screen covered port, said screen covered port allowing relatively high pressure and hot gases to enter a second chamber, said second chamber being gas

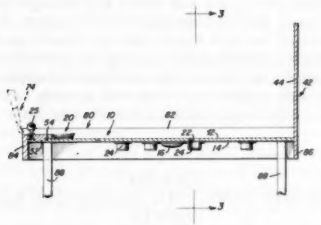
sealed to the aforementioned bulkhead and gas sealed around the screen covered port entrance of the first chamber, said second chamber comprising a fastening means forward of the screen covered port entrance to which is secured a short length of bungee cord, said cord being tied to shroud lines, said shroud lines terminating in a sheet plastic parachute, said parachute having means for creating memory, said means allowing immediate billowed deployment rearward upon ejection from the aforementioned second chamber, said means for immediate deployment being enhanced by the method of insertion, geometry of the second chamber and the packing of the parachute, in the second chamber, said method of insertion being further comprised of a small piece of wadding inserted into the second chamber prior to insertion of the parachute, secured by the shroud lines and bungee cord to the aforementioned bulkhead, said wadding filling the second chamber width and height and pushed forward to a point rearwardly of the aforementioned heat absorbing screened port said parachute being gathered longitudinally, in the direction of the memory means used for deployment, as one long pleated gathering with shroud line and inserted first following and pushing the wadding forward until only the apex of the parachute can be seen rear ward in the second chamber, said second chamber being rectangular in shape or a geometry allowing a loose but compact insertion of said parachute.

3,844,558

GOLF GAME APPARATUS

Victor J. Gigliotti, 220 Crystal Ave., New London, Conn. 06320

Filed June 19, 1973, Ser. No. 371,415
Int. Cl. A63b *67/02, 57/00*
U.S. Cl. 273—87 R **5 Claims**



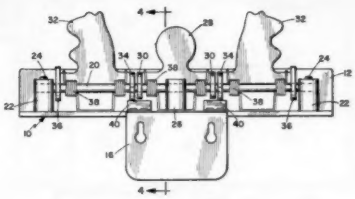
1. A portable simulated indoor-type golf game apparatus comprising: a horizontally elongated gameboard marginally surrounded by an enclosing frame having upper component rim portions rising at right angles above the plane of the top surface of said board and defining and providing an enclosed playing field for a prescribed golf ball, said playing field representing and serving as a fairway and embodying self-contained putting greens and being provided with at least nine upwardly opening holes into which said ball may enter, indicia means in the form of numerals 1–9, one of said numerals being associated with each of said holes so that each of said holes is differently numbered, and each hole having there beneath an aligned cup in which said ball may be received and trapped, a rigid upstanding vertical panel fixed at a rearward terminal end of said board, said panel providing a wholly unobstructed ball striking and rebounding backboard and the front facing surface of said panel being devoid of any apertures therein capable of receiving said golf ball and having individual selectively usable vertically spaced horizontal rows of indicia forming distributively spaced circles individually numbered from 1–9 and providing selectively playable bull's eye-type ball targets adapted to provide first points of aim prior to putting said golf ball into said cup-equipped holes, said game board being provided at its forward end with ball teeing means extending transversely across the forward end and parallel to said panel, said teeing means having an upper surface disposed at an inclination to facilitate driving said ball therefrom into contact with said distributively spaced target circles on said panel.

3,844,559

IMPACT-RIGHTING GUN TARGET

Robert H. Davidson, 15180 Anorra Way, San Diego, Calif. 92129, and Donald A. Reisch, 12922 Francine Ter., Poway, Calif. 92064

Filed Aug. 27, 1973, Ser. No. 391,644
Int. Cl. F41j *2/08*
U.S. Cl. 273—102.1 E **7 Claims**



1. An impact-righting target comprising:

a. a frame;

b. a master target element pivotally mounted to said frame;

c. at least one secondary target element pivotally mounted to said frame coaxially with and adjacent to said master target element;

d. each of said target elements being adapted to be pivoted from an exposed first position to a second position by the impact of projectiles;

e. spring means to bias each of said target elements into the first position;

f. releasible detent means for retaining said at least one secondary target element in the second position upon said last mentioned target being struck by a projectile; and

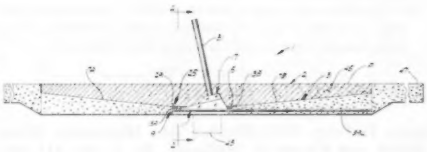
g. release means responsive to movement of said master target element to release said detent means.

3,844,560

SHOCK ABSORBING HORSESHOE PIT

Emil C. Litsch, 5324 Nottingham Ave., St. Louis, Mo. 63109

Filed Apr. 23, 1974, Ser. No. 463,316
Int. Cl. A63b *71/02*
U.S. Cl. 273—104 **10 Claims**



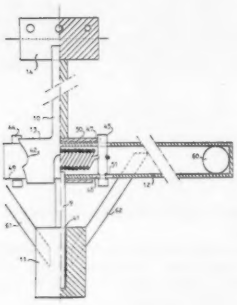
1. A horseshoe pitching court comprising a fixture having a bottom disposed below the surface of the court, a base held loosely captive by said fixture, and a stake held by said base extending generally vertically from the base above the playing surface of the court, said base having a generally horizontal first bottom surface and a second bottom surface inclined with respect to the first said surface, said first and second bottom surfaces intersecting on a common edge transverse of the direct longitudinal direction of the court whereby said base is rockable on said edge in the longitudinal direction of the court

between a first position in which the first surface of the base engages said fixture and a second position in which the second surface on the base engages said fixture, said base being gravity biased to said first position, whereby a pitched horseshoe striking said stake causes said stake and said base to rock on said fixture from its first to its second position.

3,844,561
TARGET CARRIAGE ASSEMBLY

Norbert Emmanuel Renault, Combourg, France, assignor to Tirolap Sarl, Rennes, France

Filed July 2, 1973, Ser. No. 375,909
Claims priority, application France, July 3, 1972, 72.24834
Int. Cl. F41j 3/12
U.S. Cl. 273—105.6 **6 Claims**



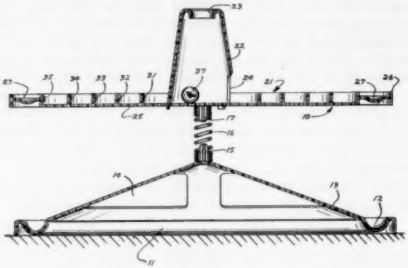
1. A holder for a mobile target designed for shooting practice including:
a target;
a mobile carriage;
a mobile target holder mounted on said carriage;
a normally vertical axis secured at its upper end to the target and at its lower end to the carriage;
said axis being freely rotatable with respect to the carriage;
a closed horizontal tube containing a ball so sized as to be freely movable within the tube;
said axis including upper and lower half-axes;
said upper axis being integrally coupled to the horizontal tube close to one end of the tube; and
stops supported by said carriage;
said stops limiting the axis rotation angle such that the carriage movement direction and the tube direction are angularly spaced by 177°;
the apparatus operating upon reversal of direction of carriage movement to move the ball causing rotation of the tube causing rotation of the target about the axis.

3,844,562
BALANCING MAZE GAME

Charles F. Foley, 3908 Merriam Rd., Minnetonka, Minn. 55343, and Charles D. McCarthy, Rt. 3, Box 217 BA, Wayzata, Minn. 55391

Filed Mar. 19, 1971, Ser. No. 126,073
Int. Cl. A63f 7/16
U.S. Cl. 273—110 **1 Claim**

1. A balancing game comprising a support base, a balancing board member having an upper surface, a ball game member for movement on said upper surface, resilient means attached between said support base and said board member to support said board member for at least tipping movement about a generally central upright axis, a plurality of generally upright wall means on the upper surface of said board member forming barriers to movement of said ball member across said upper surface, said wall means being positioned to form a defined maze path between a first portion of said upper surface adjacent said central axis and a second portion of said upper surface adjacent the periphery thereof, said ball member being movable under gravity along said upper surface and of size to move in said maze path when said upper surface is tipped, a plurality of individual counterweights, a plurality of counterweight retaining means adjacent the periphery of said board member and removed from said maze path, said resilient means being of size in relation to said counterweights whereby each of said counterweights will affect the balance of said board member and will cause tipping of said board member so that said ball member may be made to move along said

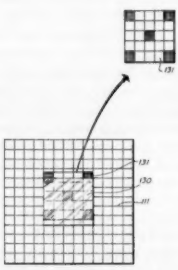


maze path under gravity by positioning said counterweights in said counterweight retaining means, and a center housing on said board member for initial positioning of said ball member, said center housing being adjacent said central upright axis and comprising a substantially continuous upright wall extending to a level above said wall means and having a generally upwardly open ball inlet opening defined therein of size to admit said ball, and said housing having a discharge opening defined therein, said discharge opening being positioned on a level to permit said ball member to roll on said upper surface when the ball member is within said housing and to roll through said discharge opening into said maze path.

3,844,563
CHESS TYPE GAME WITH CHANGEABLE BOARD INDICIA

Donald M. Isaac, 17 Saxon Rd., Worcester, Mass. 01602

Filed Dec. 4, 1972, Ser. No. 311,659
Int. Cl. A63f 3/02
U.S. Cl. 273—131 B **1 Claim**



1. A game including a board on which are provided 139 stations arranged in a square having four sides of 13 stations each, four stations at each corner of the square being indicated to be of special significance in a first way and including removable indicators which can indicate from time to time that certain stations are of special significance in a second way,

wherein four similar but distinguishable sets of 18 pieces and an additional set distinguishable from the rest are provided,

wherein a series of cards are the indicators, and a transparent envelope carried by the board into which a selected one of the cards can be placed thereby covering some but not all of the stations.

3,844,564

EDUCATIONAL GAME RELATING TO COMPUTERS

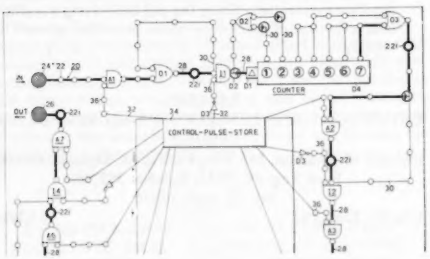
Benjamin J. Barish, 36 Yehuda Hanasse St., Tel Aviv, Israel

Filed May 21, 1973, Ser. No. 361,855

Claims priority, application Israel, May 22, 1972, 39494

Int. Cl. A63f *3/04*

U.S. Cl. 273—134 A **9 Claims**



1. A game simulating the operation of digital computers, comprising:

a. a first set of playing pieces each designating a data signal, there being one such data-signal playing piece for each player;

b. a second set of playing pieces each designating a control signal, there being one such control-signal playing piece for each player, said control-signal playing pieces being of distinguishing physical characteristics from said data-signal playing pieces;

c. a board marked with a data-signal path of movement divided into a plurality of steps for said data-signal playing pieces, and with a plurality of control-signal paths of movement divided into a plurality of steps for said control-signal playing pieces, said board carrying indicia designating logical gates used in digital computers, each gate having two inputs and one output, one input and the output of each gate being in the path of movement of the data-signal playing pieces, and the second input of each gate being in a path of movement of the control-signal playing pieces;

d. and random number generator means manipulatable by the players to determine the number of steps to be taken by each player in his turn in moving his respective data-signal playing piece and/or control-signal playing piece.

3,844,565

GOLF GAME APPARATUS

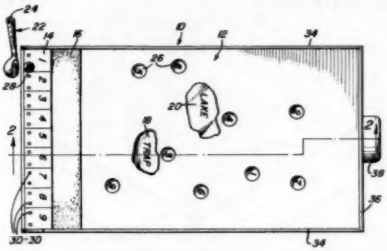
Victor J. Gigliotti, 220 Crystal Ave., New London, Conn. 06320

Continuation-in-part of Ser. No. 371,415, June 19, 1973,. This application Apr. 12, 1974, Ser. No. 460,486

Int. Cl. A63b *69/36*

U.S. Cl. 273—176 F **7 Claims**

1. A portable indoor-type golf game comprising, a generally horizontally arranged and planar game board, surrounded by upstanding rim boards to retain a prescribed golf ball on an upper playing surface portion of the game board, said game board further defining at least nine upwardly-opening and numbered holes, the area outside said holes and within said rim boards defining both fairway and putting areas; a hole-cover for each of said nine holes, each of the nine hole-covers including sufficient metal in their structure to be attracted by a magnet provided on a club, used by a player, each hole-cover further including one of the numbers one through nine, inclusive, on one side, and one of the numbers ten through eighteen, on the opposite side of each hole-cover, respectively, said hole-covers being so dimensioned so that when each is in place in its respectively numbered hole, regardless of which number is facing upwardly, the upper surface of each hole-cover will form a continuation of the playing surface of the game board; a relatively rigid, vertically oriented, panel



fixed in position at a rear portion of said game board, a tee area adjacent a front portion of said game board, generally parallel to said rear panel and said playing surface, said tee area including means to receive tees, the vertically oriented panel further including a generally centrally located cup portion for receiving a stroked golf ball when hit by a player, said panel and cup being so positioned that when either one is struck by a ball hit by a player, the ball will tend to rebound toward the numbered holes; the playing surface is further configured by various raised and depressed areas constituting hazards, when the ball lands on, or adjacent to, said areas.

3,844,566

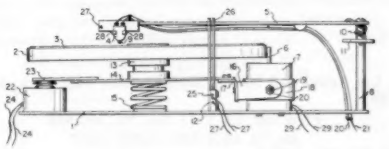
TRANSCRIBING DEVICE

Richard J. Troemel, North Prairie, and Joseph James Zimmermann, Elm Grove, both of Wis., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 20, 1971, Ser. No. 209,545

Int. Cl. G11b *17/06, 25/04*

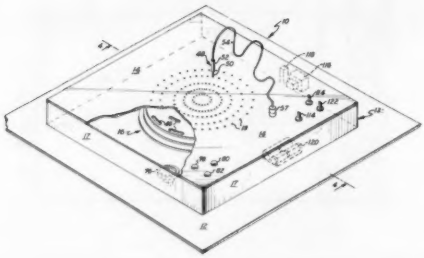
U.S. Cl. 274—9 R **9 Claims**



1. In a transcribing device having support means, a recording medium having a spiral groove therein, a turntable assembly mounted on said support means, said turntable assembly including a turntable adapted to receive and support said recording medium, turntable drive means, an arm mounted on said support for arcuate movement in a plane over the surface of said turntable, said arm including means for engaging said groove, means for biasing said arm for arcuate movement in a first direction, said means on said arm engaging said groove to move said arm in an arcuate direction, opposite said first direction, in response to said drive means rotating said turntable, the improvement comprising: an electromagnet mounted on said support means, adjacent to said turntable assembly,

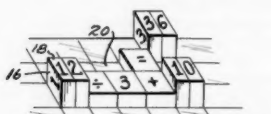
whereby upon energization of said electromagnet said turntable assembly is moved away from said arm thereby disengaging said groove engaging means from said groove and allowing said arm to move in said first direction.

3,844,567
PROBE CHANCE DEVICE HAVING ELECTRICAL SIGNALLING READOUT
Robert L. Marker, 143 S. Center, Casper, Wyo. 82601
Filed June 27, 1973, Ser. No. 374,077
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 A **21 Claims**



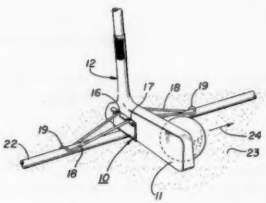
1. A chance device comprising an electroconductive probe and several sheets assembled in a tier, the outermost sheet having a regular pattern of perforations with the several remaining relatively movable sheets therebeneath having slots randomly disposed therethrough to be alignable by chance with said perforations by said movement, said slots being elongated in the direction of movement and larger than said perforations, all being sized to receive the shank of said probe inserted through any chosen one of said perforations and capable of penetrating one or more of said slots depending upon whether slots of said slot-bearing sheets are aligned with said chosen perforation, and said sheets being non-conductive with the surface area of each of said slotted sheets being electroconductive except in the areas of said slotted sheet inclusive of and immediately surrounding each of said slots, whereby passage of said probe through perforations and slots avoids electrical contact with the surrounding conductive surfaces, an electrical signalling means, said signalling means, probe and conductive surfaces being in circuit with a source of electrical current completable to activate said signalling means when the probe, inserted into a perforation, comes into contact with a conductive surface area.

3,844,568
GAME APPARATUS
E. Lee Armstrong, 276 N. Snelling, Saint Paul Park, Minn. 55104
Filed Apr. 13, 1973, Ser. No. 350,988
Int. Cl. A63f *3/00*; **G09b** *23/02*
U.S. Cl. 273—135 R **8 Claims**



1. A numerical manipulation board game, comprising:
a game board ruled with a plurality of generally rectangular grid cells of uniform size;
a plurality of playing tiles each constituted by a generally rectangular block having a plurality of mutually perpendicular adjacent sides, some ones of said sides being substantially as long and substantially as wide as individuals of said grid cells and the remainder of said sides being substantially as extensive in one dimension as the comparable dimension of individuals of said grid cells and so inextensive in the other dimension that more than one such block may rest side-by-side on such remaining sides within individuals of said grid cells;
at least one of the first-described sides and at least one of the last-described sides bearing an item of numerical indicia, whereby the block may rest in a grid cell upon a first-described side, substantially fill the cell and have an item of numerical indicia presented upward for viewing, and the block may rest in a grid cell upon a last-described side beside at least one other such block so disposed, together substantially filling the cell and having a multiple character item of numerical indicia presented upward for viewing.

3,844,569
DEVICE FOR USE IN DEVELOPING A SQUARE PUTTING STROKE
Rudolph M. Swanson, 345 Wing Park Blvd., Elgin, Ill. 60120
Filed Aug. 30, 1973, Ser. No. 392,980
Int. Cl. A63b *69/36*
U.S. Cl. 273—192 **7 Claims**

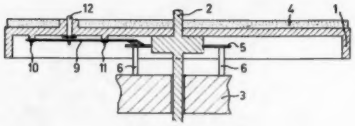


1. Apparatus for use in developing a square putting stroke comprising
clamp means attached to the head of a putter,
first and second arms mounted to said clamp means for pivotable movement in a common vertical plane and respectively extending perpendicular to the face of said putter,
one of said arms extending in a direction rearwardly of said head and the other of said arms extending in a direction forewardly of said head,
a straight rod of circular cross-section resting on a support surface beneath said clamp, and
a pair of guide means respectively disposed on said arms in proximity to the ends thereof and each having a U-shaped cross-section resting on and partially receiving said rod and movable therealong while maintaining said head at right angles to said rod,
whereby said putter face is maintained perpendicular to said rod as said putter head is stroked back and forth.

3,844,570
RECORD PLAYER
Michael Evers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.
Filed June 21, 1973, Ser. No. 372,280
Claims priority, application Netherlands, July 1, 1972, 729295
Int. Cl. G11b *17/00*
U.S. Cl. 274—1 R **2 Claims**

1. In a record player comprising a drive shaft, a turntable carried on the drive shaft, a drive motor for driving the turnta-

ble, a motor circuit for controlling operation thereof, a switch in said motor circuit having contact elements located underneath said turntable, a depressable sensor pin projecting through said turntable for operating said switch when a gramophone record is placed on said turntable, spring means engaging and biasing said sensor pin against depression, a ring



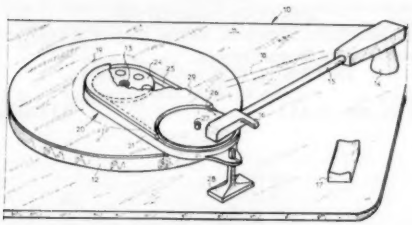
shaped plate concentrically arranged about said drive shaft forming one of said contact elements, two electrically conducting contact tracks provided on said plate and included in said motor circuit, means insulating said tracks from each other, where in said spring means comprises and a leaf spring attached to the underside of said turntable and forming the other contact element of said switch.

3,844,571

SOUND PICK-UP DEVICE FOR PLAYING BACK RECORDS OF SMALL DIAMETERS ON ELECTRIC GRAMOPHONES OR AND OTHER REPRODUCING APPARATUS PROVIDED WITH AUTOMATIC STOP MEANS

Alain Mensier, Bois-Colombes, France, assignor to M. A. V. (Methodes Audio-Visuelles, Paris, France

Filed Dec. 20, 1972, Ser. No. 317,065
Int. Cl. G11b *3/60*
U.S. Cl. 274—39 R **7 Claims**



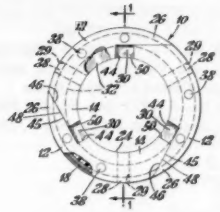
1. In combination with a standard record player including a mounting plate through which extends an axle rotatable about a predetermined axis, a turn-table rotatably mounted on said axle, a pick-up arm adapted to sweep a sector of said turn-table and automatic stop means effective to terminate rotation of said axle when said pick-up is a predetermined distance from said axis, a device for playing back a phonograph record having a radius smaller than said predetermined distance and having an engraved surface, said device comprising an auxiliary turn-table and an auxiliary turn-table drive means rotatably driven by said axle to in turn drive said auxiliary turn-table, said auxiliary turn-table being maintained above the first-named turn-table by a support in a radially off-set position with respect to said axle such that at least a part of the engraved surface of said phonograph record is located in the sector swept by said pick-up arm in normal operation and that said support is mounted on the axle of said first-named turn-table by said auxiliary turn-table drive means and is supported beyond the periphery of the first-named turn-table upon said mounting plate of said record player.

3,844,572

PACKING RINGS

Morris J. Parker, Amherst Township, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 102,225, Dec. 28, 1970, abandoned, which is a continuation of Ser. No. 586,886, Oct. 14, 1966, abandoned. This application Aug. 16, 1972, Ser. No. 281,159
Int. Cl. F16j *9/06*
U.S. Cl. 277—27 **3 Claims**



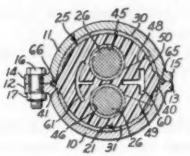
1. A segmented packing ring comprising the combination of three identical arcuate segments arranged and positioned to form inner and outer circumferences with top and bottom surfaces in a common plane, each arcuate segment having a body portion and a face seal portion rigidly connected thereto; each face seal portion being arranged to extend beyond one end of the body portion to which it is connected and to overlap one end of the body portion of an adjacent arcuate segment; each of said face seal portions being arranged to slideably engage a face seal portion of an adjacent arcuate segment as contiguous surfaces along a line parallel to a tangent to the inner circumference of said packing ring with the face seal contiguous surfaces along said line of slideable engagement being substantially perpendicular to the plane of said packing ring with an end gap at said inner circumference extending only part of the ring width towards said outer circumference; the adjacent end of said body portions being spaced from each other by gaps and arranged to extend beyond one end of said face seal portion, each arcuate segment inner arcuate surface having a pressure balancing groove therein substantially in the plane of said packing ring; and spring means provided on each arcuate segment for urging the three arcuate segments radially inward toward a common center.

3,844,573

SPLICE CASE WITH GAS TIGHT SEAL

James A. Wright, and James M. Kosmala, both of Cattaraugus, N.Y., assignors to The Dexter Corporation, Olean, N.Y.

Division of Ser. No. 260,224, June 6, 1972, Pat. No. 3,796,823. This application June 4, 1973, Ser. No. 366,443
Int. Cl. F16j *15/10;* **H02g** *15/08*
U.S. Cl. 277—216 **10 Claims**



1. A grommet for positioning in the access openings of a split case for a multiconductor sheathed communication cable splice, said grommet comprising a generally cylindrical unitary elastomeric body having an inner face and an outer face

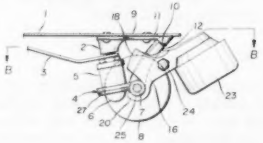
and at least one cable passage therethrough, a slit through a thick wall section between the cable passage and the periphery, a dimension perpendicular to the parting plane of the split case greater than the access opening diameter, and cavities in said inner face on opposite sides of said cable passage and extending part way toward said outer face, so that the split case when joined clamps said grommet in the access opening compressing the grommet clamping the grommet on the cable sheath and producing compression forces at the face of the slit for maintaining a gas tight seal between case and cable.

3,844,574

ROLLER SKATE TOE STOP ASSEMBLY

Kazuhiro Kosono, and Yasukazu Kosono, both of No. 9-1, Asakusa 7-chome, Daito-ku, Tokyo, Japan

Filed Jan. 5, 1973, Ser. No. 321,306
Claims priority, application Japan, July 7, 1972, 47-80333
Int. Cl. A63c *17/14*
U.S. Cl. 280—11.2 **3 Claims**



1. For mounting on a roller skate structure that includes a body plate affixed to a roller skate shoe, a hanger secured to the underside of said body plate near the front end thereof and provided with a bearing bore at the front end thereof, and a wheel axle mounting truck comprising an inclined rod portion of non-circular cross-section and having an upper, forward end thereof received within said bearing bore, and a laterally leftwardly and rightwardly extending wheel axle bearing portion formed at the lower, rear end of the rod portion;

toe stop assembly comprising:

a pair of holding members disengageably securable to said truck to project upwardly and forwardly therefrom and intersecting each other at forward ends thereof, each holding member having an upwardly facing embracing arm at the downward and inward end thereof for embracing said wheel axle bearing portion from below and further having a laterally facing gripping arm projecting therefrom suprajacent the embracing arm thereof, and respectively disposed for gripping engagement with said rod portion at opposed sides of said rod portion, said holding members each having the gripping arm thereof provided with an interior face of a non-circular configuration generally corresponding to the non-circular cross-sectional rod portion;

a through bore transversally extending through each of the respective holding members from lateral sides thereof in front of said rod portion;

a tightening bolt threaded in the through bores of both said holding members;

means hinging the holding members together at their intersecting forward ends; and

a rubber toe stop body mounted at the intersecting forward ends of said holding members.

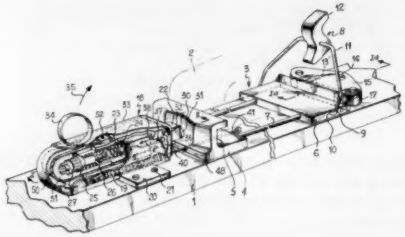
3,844,575

CONNECTING ELEMENT FOR SKI BOOT

Georges Pierre Joseph Salomon, 34 Avenue de Loverchy, Annecy, France

Filed Jan. 29, 1973, Ser. No. 327,808
Claims priority, application France, Feb. 1, 1972, 72.3321
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 N **21 Claims**

1. A device for connecting a boot to a ski which allows them to move away from each other but prevents their complete separation, said boot being held to said ski by a retention means which can be safety-released or intentionally released when the user actuates a control member, said device comprising at least one connecting element, one end thereof being accommodated in a part secured to the ski, and the other end in a part secured to the boot, said connecting element being independent of said retention means and not acting upon the boot when the latter is held in position on the ski, said con-



necting element being coupled to said control member which is adapted to move between two positions:

a first boot-retaining position in which the retention means is locked and the control member does not act upon the connecting element;

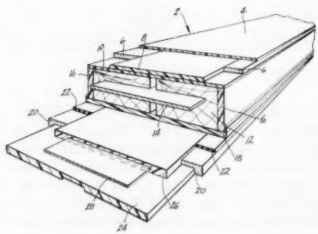
a second position for unlocking the retention means in which the control member exerts a pull, during the movement from said first to said second position, both on the retention means in order to unlock it, and on the connecting element in order to restore the boot to a position in which it may be conveniently put on again.

3,844,576

VIBRATION DAMPED SKI

Hermann Schultes, Hohenems, Austria, assignor to Olin Corporation, New Haven, Conn.

Filed July 18, 1973, Ser. No. 380,309
Int. Cl. A63c *5/00*
U.S. Cl. 280—11.13 L **13 Claims**



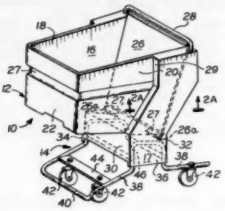
1. A laminated ski structure of the type comprising a core, a top surface, a bottom surface, and one or more interbonded intermediate layers disposed between said top and bottom surfaces, the improvement comprising at least one of said intermediate layers being a vibration damping laminate comprising a layer of material having a relatively high modulus of elasticity and respective layers of elastomeric material bonded to opposite faces of said layer of high modulus material, at least one of said layers of elastomeric material having a loss tangent which is greater than about 0.8.

3,844,577

SHOPPING CART

Michael Wahl, Searington, L. I., N.Y., assignor to Supermarket Equipment Group Inc., Long Island City, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,419
Int. Cl. B62b *3/02*
U.S. Cl. 280—33.99 R 6 Claims



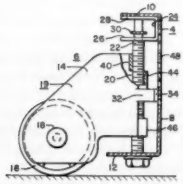
1. A shopping cart comprising:
a. a housing having an upper and lower compartment,
b. said upper compartment having a front wall, a pair of opposite sidewalls and a bottom wall,
c. said upper compartment bottom wall defining the top wall of said lower compartment, which lower compartment includes a front wall, a rear wall and a pair of sidewalls extending downwardly from said top wall,
d. said housing being formed of a one-piece integrally molded part,
e. trolley means, and
f. cooperating means on said trolley means and said lower compartment for supporting and imparting mobility to said shopping cart.

3,844,578

ADJUSTABLE ROLLER ARRANGEMENT

John X. Matyskella, and Donald J. Spencer, both of Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 16, 1973, Ser. No. 360,995
Int. Cl. B62d *33/08*
U.S. Cl. 280—43.22 8 Claims



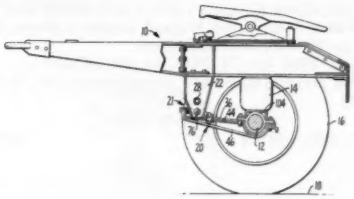
1. An adjustable roller arrangement for supporting and leveling an appliance or the like, comprising:
a base frame having a roller assembly carried thereby, said frame including an upper retaining means and a lower bearing means for holding the upper and lower ends of a vertically disposed threaded bolt for rotation, but preventing axial movement of said bolt, the head of said bolt underlying said lower bearing means;
said roller assembly carried from said base frame by said bolt, said roller assembly including a roller wheel carried by opposite legs of a generally U-shaped member, the bight portion of said U-shaped member including a threaded bore receiving said threaded bolt, and being disposed in a generally vertical plane;
means preventing rotation of said roller assembly about a vertical axis so that as said bolt head is turned one way or the other, said roller assembly is moved up or down on said bolt.

3,844,579

LEAF SPRING TRAILING ARM SUSPENSION

Joseph J. Cunha, Castro Valley, Calif., assignor to Cunha Products, Inc., Haywood, Calif.

Filed Jan. 31, 1973, Ser. No. 328,455
Int. Cl. B60g *11/34*
U.S. Cl. 280—124 R 6 Claims



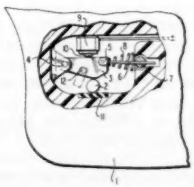
1. A suspension assembly for positioning a wheel supported axle below the frame of a vehicle, said assembly comprising: a pair of transversely spaced hangers depending from a frame; a bracket pivotally mounted on each of the hangers; a leaf spring bundle secured to each bracket and extending therefrom to the axle, each of said bundles comprising upper and lower leaves which diverge relative to one another from the hanger to which it is connected; means securing the upper and lower leaves of each bundle to the axle in vertically spaced relationship so that the upper leaves extend to a connection at a mid-portion of the axle and the lower leaves extend to a connection at a lower portion of the axle spaced beneath said mid-portion; and, resilient means disposed to suspend the frame on the axle.

3,844,580

PROTECTION INSTALLATION FOR THE PASSENGERS OF VEHICLES ESPECIALLY MOTOR VEHICLES

Hans O. Scherenberg, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 17, 1972, Ser. No. 227,039
Claims priority, application Germany, Feb. 18, 1971, 2107780
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB 9 Claims



1. A protective device for the passengers of vehicles, especially motor vehicles, which are equipped with gas cushion means automatically inflatable in case of an accident, characterized in that the protective device provided for a vehicle passenger comprises valve means for at least partially closing the hearing passage in the ear of the passenger and including

further means for actuating said valve means in response to a control magnitude reflecting at least one of predetermined deceleration of the vehicle and predetermined pressure increase occurring in the vehicle as a result of the inflation of the gas cushion means, said valve means being actuated to at least partially close said hearing passage, and in which the triggering pulse for the inflation of the gas cushion means take place by way of an electric energizing circuit closed by a switch means responding to a predetermined vehicle deceleration, characterized in that the protective device is actuated by the closing of the energizing circuit prior to the application of the triggering pulse to an actuating mechanism for causing inflation of the gas cushion means.

3,844,581

INFLATABLE SAFETY BELT AND HEAD BAG

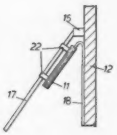
John William Fox, Ashtead, England, assignor to Project Laboratories Limited, London, England

Filed Apr. 25, 1972, Ser. No. 247,492

Claims priority, application Great Britain, Feb. 7, 1972, 5629/72

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **5 Claims**



1. A vehicle safety system for protecting the occupant of a vehicle in the event of an accident, said system comprising:
   1. an inflatable strap member comprising a diagonal safety belt adapted to be secured at its ends and to extend across an occupant of the vehicle so as to restrain the occupant in position in the event of an accident;
   2. an inflatable head bag mounted on said diagonal safety belt at a position adjacent one side of the head position, said inflatable head bag being formed as a separate unit and being adapted to be normally in the collapsed condition;
   3. a source of compressed gas;
   4. valve means for controlling the supply of gas from said source, said valve means being arranged to respond to vehicle impact to release gas from said source;
   5. a first connecting passage connecting said source of gas to said inflatable head bag; and
   6. a second connecting passage connecting said source of gas to said inflatable strap member.

3,844,582

LEVELING AND STABILIZING DEVICE

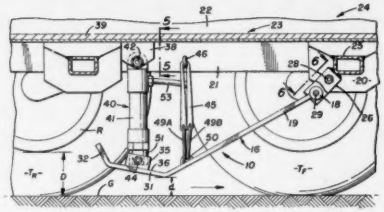
Raymond F. Cook, 3023 Yellowcreek Rd., Bath, Ohio 44210

Filed Dec. 6, 1972, Ser. No. 312,608

Int. Cl. B60s *9/10*

U.S. Cl. 280—150.5 **3 Claims**

1. A vehicle comprising; a frame having side members, at least one wheel means on each side of the vehicle and supporting said frame, a tongue for drawing the vehicle, jack means mounted on said tongue to effect pitch-type leveling, means pivotally mounting a skid on each said side member adjacent each side wheel means, each said skid being directed downwardly and rearwardly with respect to the vehicle and movable in a vertical plane parallel to said wheel means, a pair of cylinders each operative selectively to extend an individual piston rod, one said cylinder and its associated, individual piston rod being connected between each side member and



the skid member pivotally mounted therefrom for moving selective skids to effect roll-type leveling.

3,844,583

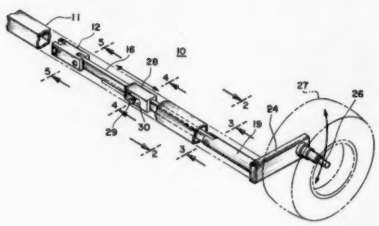
VEHICLE TORSION BAR

Toshihiko Sakow, 82 Copley Ave., Teaneck, N.J. 07666, and Robert D. Pfister, 807 Kingswood Dr., Cary, N.C. 27511

Filed Feb. 21, 1973, Ser. No. 334,380

Int. Cl. B60g *11/20*

U.S. Cl. 280—124 B **9 Claims**



1. A vehicle wheel spring mounting comprising a longitudinally extending torsion bar, a longitudinally extending wheel supporting axle, means connecting said axle to an outer portion of said torsion bar and transversely offset from the longitudinal axis of said torsion bar for rocking with said outer portion about said longitudinal axis characterized by means for releasably locking said torsion bar against axial rotation at an adjustable preselected point along the length of said torsion bar inwardly of said outer portion.

3,844,584

JAW AND WEDGE FOR FIFTH WHEELS

John P. K. Fontaine, P.O. Drawer 10887, Birmingham, Ala. 35202

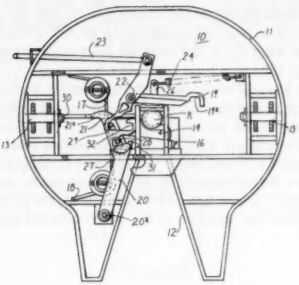
Filed Nov. 15, 1973, Ser. No. 416,047

Int. Cl. B62d *53/10*

U.S. Cl. 280—434 **6 Claims**

1. An improved wedge and jaw for a fifth wheel adapted to couple a tractor to a towed vehicle through a king pin,
   a. complementarily tapered surfaces on the cooperating sides of the jaw and wedge, and

b. said surfaces being provided with a plurality of mutually engageable, generally plane surfaces lying generally at



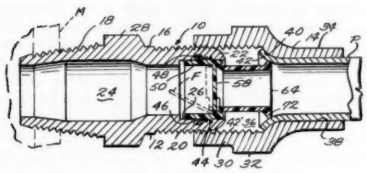
right angles to the direction of force applied to the jaw by the king pin, whereby tendency of the wedge to squirt is substantially eliminated.

3,844,585

PIPE COUPLING

Robert E. Sands, Shelbyville, and Carl E. Floren, Decatur, both of Ill., assignors to Mueller Co., Decatur, Ill.

Filed July 10, 1973, Ser. No. 378,019
Int. Cl. F16l *35/00, 37/00*
U.S. Cl. 285—3 **22 Claims**



1. A coupling for use in connecting an end of a service pipe to a fluid distribution system before or while the system is under fluid pressure comprising:

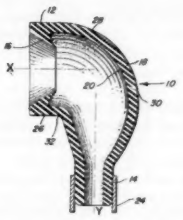
a first part and a second part movable relative toward each other, said parts each having a passage therethrough, said first part being connected to said fluid distribution system and having a counterbore in its passage, an outwardly facing annular shoulder between said counterbore and the passage of said first part, an activating plug carried in the counterbore of said first part, said plug being tubular and having a rupturable disc formed integrally therein intermediate its ends to define a first closed bottom bore facing the shoulder of said first part and a second closed bottom bore facing said second part, at least one of said first part and said activating plug being a plastic material, cooperating means on said activating plug and the wall of said counterbore of said first part to permit said activating plug to be inserted into said counterbore and after insertion, to retain said activating plug in said counterbore against axial movement outwardly of said first part by fluid pressure in said fluid distribution system, said cooperating means for insertion of and retaining of said activating plug in said counterbore including a plurality of axially spaced teeth on the periphery of said plug, said teeth having a saw tooth configuration in longitudinal radial section with a substantially radial surface facing away from said fluid distribution system and a plurality of grooves complementary to said teeth, said grooves being in the wall of the counterbore of said first part, and a tubular cutter member carried between said first and second parts and having an arcuate cutting edge projecting forward of a non-cutting forward edge and facing said disc, said cutter member being movable toward said disc when said first and second parts are moved axially toward one another to cut and fold a flap from said disc.

3,844,586

FAUCET CONNECTOR

George Olen, Des Plaines, Ill., assignor to Selfix, Inc., Chicago, Ill.

Filed Feb. 20, 1973, Ser. No. 334,014
Int. Cl. F16l *21/00*
U.S. Cl. 285—8 **3 Claims**



1. A detachable connector for connecting an implement to an outwardly extending elongate faucet member from which fluid is discharged, said connector comprising:

a hollow generally elbow-shaped open-ended resilient body having one end defining an inlet and another end in the form of a generally cylindrical annular neck portion defining an outlet, the axes of said inlet and said outlet being disposed at an angle with respect to each other;

the portion of said body extending between said inlet and said generally cylindrical annular neck portion being polygonal in cross section,

a resilient generally annular inlet flange extending radially and axially inwardly from said inlet end at an angle to the axes of said inlet, the free end of said flange defining a generally circular inlet aperture for receiving a faucet member,

the polygonal cross sectional external configuration of said body cooperating with said annular inlet flange for facilitating sealing engagement and positive retention of said connector on said faucet member, the cross sectional dimension of said body adjacent said inlet aperture being greater than both said inlet aperture and said outlet, said body accommodating therein the terminal portion of said faucet member from which fluid is discharged in a direction generally along the axis of said oulet and substantially at angle to said inlet for minimizing the tendencies of said fluid discharge from said faucet member to adversely affect the sealing engagement of said connector to said faucet member.

3,844,587

RELEASABLE CONNECTION FOR COAXIAL TUBES

Siegfried Fuhrmann, Grossburgwedel; Volkwart Harders, Altwarmbuchen; Hartmut Kruger, Vinnhorst, and Rudiger Schwenke, Letter, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

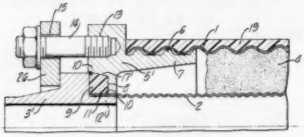
Filed Mar. 19, 1973, Ser. No. 342,488
Int. Cl. F16l *55/00*
U.S. Cl. 285—47 **6 Claims**

1. In a releasable connection between a coaxial tube system having two corrugated, concentric tubes positioned and re-

tained relative to each other by spacer means, and a connecting piece with a central bore to be aligned with the inner one of the two tubes, at least the outer one having helical corrugation, a flange element having a threaded sleeve portion threaded into the corrugation of the outer tube and being bolted to said connecting piece, the improvement comprising:

an end portion of the inner tube being flat, without corrugation nor outwardly extending flange but having smooth inner and outer surfaces;

an annulus having an outer surface and placed into the inner tube and into abutment with the inner surface of the flat portion thereof;



the flange element having a recess facing the outer surface of the flat end of the inner tube in radial inward direction and adjacent but opposite to the location of abutment of the said annulus with the inner tube;

a sealing ring in said recess in sealing abutment with a flat tube end, so that upon bolting the connecting piece to the flange element under axially directed tension the flat tube is sandwiched between the flange element with sealing ring and the said annulus while the sealing ring is radially compressed against the flat end of the inner tube; and

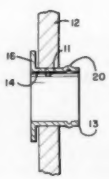
means to sealingly connect the annulus to the connecting piece.

3,844,588

CONDENSER TUBE SUPPORT PLATE INSERT

William Jocsak, Easton, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed June 21, 1972, Ser. No. 264,737
Int. Cl. F16l *5/02*
U.S. Cl. 285—162 **4 Claims**



1. In combination: a condenser support plate having at least one condenser tube support hole formed through the condenser support plate;

a flexible, axially extending insert positioned in the condenser tube support hole and in contact with the wall of said support hole; and having an axially extending hole having the same diameter throughout its length formed therethrough; a condenser tube inserted through the insert, and in contact with the wall of said axially extending hole

said insert having the same outside diameter along substantially its entire length and also having first and second end portions, relative the axis thereof, for projection thereof from opposite sides of the support plate, and an intermediate portion positioned in the tube support hole, the length of the intermediate portion of the insert being more than the length of the condenser tube support hole, and the outside diameter of the intermediate portion being such that the insert fitted loosely in the tube support hole when the insert was inserted in the hole, and the diameter of the axially extending bore in the insert and the flexibility of the insert being such that the intermediate portion was expanded along its entire length to provide a snug fit in the support plate hole when the condenser tube was inserted in the insert;

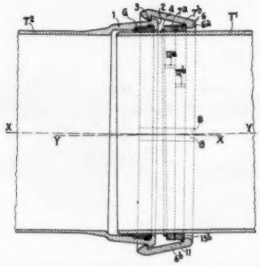
a flange integral with said first end portion; and at least one convex bump on said second end portion adapted to be compressed to permit the insertion of the flexible insert into the support plate hole and thereafter inhibit the axial movement of said insert relative to the support plate, the convex bump having an external diameter greater than the external diameter of the intermediate portion before and after the insertion of the insert into the support plate hole.

3,844,589

LOCKING DEVICE FOR PIPE ELEMENTS

Georges Eugene Bram, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Sept. 25, 1972, Ser. No. 292,225
Claims priority, application France, Oct. 12, 1971, 71.36562
Int. Cl. F16l *27/00*
U.S. Cl. 285—184 **6 Claims**

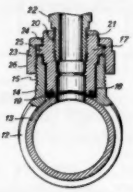


1. A device for locking a joint between two pipe elements which may have an angular deviation between their axes, so as to preclude axial separation of the pipe elements throughout the periphery of the pipe elements while allowing the pipe elements to move toward each other, comprising means defining a first abutment projection integral with an outer surface of a first abutment projection integral with an outer surface of a first of said pipe elements, means defining a second abutment projection integral with an outer surface of a second of said pipe elements, means defining a member of revolution which surrounds the joint and comprises adjacent one end of the member an inner shoulder and at an opposite end of the member means for axially supporting the second abutment projection, and annular circumferentially substantially continuous spacer means mounted on said first pipe element and having an axial thickness which is adjustable along the periphery of the spacer means in accordance with the angular deviation between the two pipe elements and being axially interposed between and engaging the first abutment projection and the inner shoulder to be effective as a support precluding axial separation of the pipes in an even manner around the periphery of the abutment projection and the inner shoulder.

3,844,590
INTEGRAL CLAMP FOR HYDRAULIC CONNECTIONS

Jorge de la Fuente Burton, Mexico, Mexico, assignor to Plastotecnica, S.A., Naucalpan de Juarez, Mexico

Continuation of Ser. No. 175,089, Aug. 26, 1971, abandoned. This application June 25, 1973, Ser. No. 372,811
Int. Cl. F16l *5/00*
U.S. Cl. 285—197 **4 Claims**



1. An integral clamp for hydraulic connections for use in household service and the like, comprising in combination:

a. clamp means including a hoop portion having a substantially constant diameter and extending for substantially 360° adapted to substantially completely encompass and clamp a main tubular member integrally formed with said hoop portion and normally projecting thereform, said tubular member and said hoop portion being diametrically split along the axial length thereof so as to form a resiliently deformable split-ring structure and axially extending guide means being formed on the internal annular surface of said tubular member;

b. a tubular coupling sleeve forming a connection with a household piping being fixedly positioned within said tubular member; said coupling sleeve having an axially inner end surface arcuately shaped so as to be coextensive with the inner circumferential surface of said hoop portion; guide means formed on the exterior annular surface of said coupling sleeve cooperatively engaging the guide means on said tubular member so as to position said coupling sleeve in a predetermined angular relationship within said tubular member; and annular groove means in the arcuate inner end of said coupling sleeve;

c. ring-shaped seal means positioned in said annular groove means and projecting therefrom radially inwardly of said hoop portion;

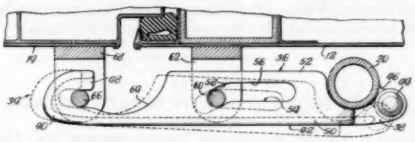
d. and a ring-shaped binding nut being threadedly engaged on a complementary thread on the external annular surface of said tubular member and adapted to exert a compressive force to said tubular member and said hoop portion so as to clamp the latter about the main piping, said tubular member and coupling sleeve having diameters smaller than the diameter of said hoop portion.

3,844,591
DOOR LATCH MEANS

Matthew S. Velcover, Kenosha, Wis., assignor to White Welding & Mfg., Inc., Kenosha, Wis.

Filed Sept. 24, 1973, Ser. No. 400,006
Int. Cl. E05c *7/04*
U.S. Cl. 292—7 **8 Claims**

1. For use with first and second vertical hinged doors having inner edges adjacently located when the doors are in a closed position, and a vertical door fastening operating shaft rotatably mounted on the outer face of the first door, latch means comprising a horizontal elongated latch member presenting inner and outer ends and a front face, said latch member being pivotally mounted on a vertical axis at said inner end thereof to the operating shaft, said latch member having vertically open cam slot means extending lengthwise thereof intermediate of the ends thereof and having a hook-shaped nose portion at said outer end thereof, a vertical pin member carried by the first door and being engaged in said cam slot means, a vertical post member carried by the second door and engageable by said nose portion, said cam slot means being caused by movement of said latch member in response to rotation of the operating shaft in one direction to ride over said pin member whereby said nose portion is successively swung toward the second door and then engaged with said post member for

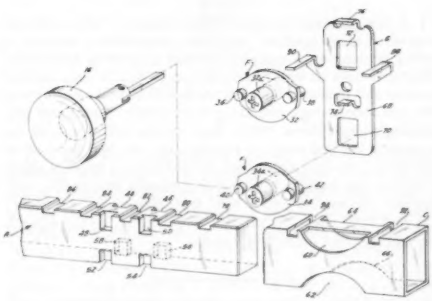


closing said latch means with said post member positioned at a predetermined location relative to said pin member, and said cam slot means being caused by movement of said latch member in response to rotation of the operating shaft in the other direction to ride over said pin member whereby said nose portion is successively disengaged from said post member and then swung away from the second door for opening said latch means.

3,844,592
ACTUATING MECHANISM FOR DOUBLE BAR LOCK

Nicholas Giardina, 121 Wallace Ave., Mount Vernon, N.Y. 10552; Melvyn A. Gervis, 295 Franklin St., Haworth, N.J. 07641; Eugene Taras Wozny, 46 Van Orden Rd., Harrington Park, N.J. 07640, and Richard D. Babcock, 216 Fullmore St., Massapequa, N.Y. 11758

Filed May 10, 1973, Ser. No. 359,135
Int. Cl. E05c *1/06*
U.S. Cl. 292—39 **6 Claims**



1. In an actuating mechanism for a double bar lock of the type having first and second bars slidably mounted in a housing for movement between a locked position wherein each of said bars extend outwardly from opposite sides of said housing and an unlocked position wherein said bars are moved inwardly towards each other, and driving means effective to move one of the bars in a given direction in response to the movement of the other of said bars in the opposite direction such that the movement of one bar between the locked and unlocked positions moves the other bar between said positions, the improvement which comprises moving means comprising a first and a second rotatable cam spaced from each other and rotatable in the same plane, said moving means being operably connected to said first bar and effective when actuated to move said first bar between the locked and unlocked positions, a recess on said first bar, and deadlocking

means external to said first bar and movable between a first position wherein said recess is operably engaged by said deadlocking means to prevent the movement of said first bar and a second position wherein said recess is operably disengaged by said deadlocking means to permit movement of said first bar, said deadlocking means being moved between said first and second positions by actuation of said moving means, said deadlocking means comprising a movable member having a pair of cam followers mounted thereon, each of said cam followers being operatively engageable with a different one of said cams such that said member is moved between said first and second positions by rotation of either of said cams.

3,844,593

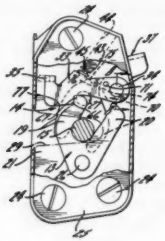
VEHICLE DOOR LATCH WITH FORKED LATCHING ROTORS

Robert E. Slattery, c/o Atwood Vacuum Machine Co., 1400 Eddy Ave., Rockford, Ill. 61101

Division of Ser. No. 195,943, Nov. 5, 1971, Pat. No. 3,773,368. This application Apr. 27, 1973, Ser. No. 355,017

Int. Cl. E05c *3/26*

U.S. Cl. 292—48 **3 Claims**



1. A latch adapted to coact with a striker to hold a vehicle door in a closed position, said latch comprising a support, a forked latching rotor mounted on said support to turn about a first axis from an unlatched position to a secondary latched position and then to a fully latched position, said rotor having first and second legs extending transversely of said axis and defining a single throat which receives said striker in both the secondary latched position and the fully latched position of said rotor, and means mounted on said support to pivot about a second and parallel axis and sequentially engageable with said first and second legs to hold said rotor in said secondary and said fully latched positions, respectively, as the rotor is turned from said unlatched position.

3,844,594

TRACTION GATE

Felix B. Romberg, P.O. 218 Holland, Holland, Tex. 76534

Division of Ser. No. 270,308, July 10, 1972. This application July 9, 1973, Ser. No. 377,318

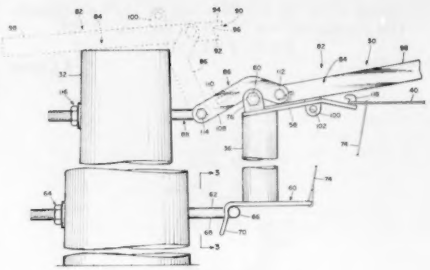
Int. Cl. E05c *5/02*

U.S. Cl. 292—66 **4 Claims**

1. The combination of a gate end standard and a traction mechanism for securing the standard to a gate post, wherein:

said gate end standard comprises a tubular shaft, a block on top of said shaft, and a pivot on top of said block,

said traction mechanism comprises a traction bolt adapted to be secured to a gate post, a traction link pivotally connected at one end to one end of said traction bolt, and a traction lever pivotally connected at a fulcrum intermediate of its ends to the other end of said traction link, and said traction lever having one end engagable with and pivotable about said pivot of said standard and having a handle at the opposite end whereby said lever can be



placed into engagement with said pivot and the lever then pivoted about said pivot to apply traction to the upper end of said standard in toggle action.

3,844,595

DOOR LOCK ARRANGEMENT FOR AUTOMOBILES

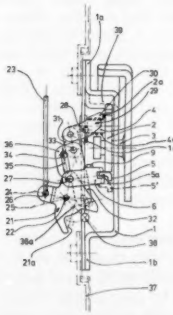
Helmut Meinow, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Oct. 25, 1972, Ser. No. 300,460

Claims priority, application Germany, Oct. 28, 1971, 2153707

Int. Cl. E05c *3/00*

U.S. Cl. 292—216 **8 Claims**



1. A lock arrangement for doors that are hinged at one end thereof, said lock arrangement components being mounted through the end of the door that is opposite the hinged end thereof without removal of the interior door paneling, said lock arrangement comprising a lock member adapted to be mounted on the end of the door that is opposite to the hinged end thereof and a latch member adapted to be mounted on a door post opposite to the end of the door that receives the lock member for cooperating with said lock member, operating means for said lock member, first actuating means associated with said operating means, means for releasably coupling said operating means with said associated first actuating means, a safety means, second actuating means associated with said safety means, means for releasably coupling said safety means with said associated second actuating means, a common supporting member for said lock member, for said operating means and for said safety means, said supporting member being adapted to be mounted on the end of the door opposite the hinged end thereof, said coupling means compris-

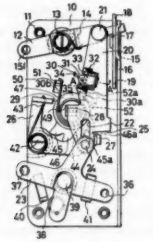
ing parts of said operating and safety means, axle means pivotally supporting said coupling means, said axle means, in the mounted position of said supporting member, lying perpendicularly with respect to a general plane of the door, said parts of said coupling means having portions for establishing said coupling projecting from the back side of the lock arrangement and thereby being in a freely accessible position from the back side of the lock arrangement, said first and second actuating means being constructed and arranged for permitting establishing of coupling before the mounting of said supporting member on the end of the door opposite the hinged end thereof.

3,844,596

KEYLESS DOOR LOCKING METHOD AND APPARATUS

Nozomu Torii, Hekinan, and Yoshikatsu Furuya, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Oct. 27, 1972, Ser. No. 301,276
Claims priority, application Japan, Oct. 27, 1971, 46-85246
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **6 Claims**



1. A keyless method for locking a door of a vehicle, comprising the steps of:
operating a handle of the door thereby displacing a latch releasing means to a selected position, adjacent a latch member for engagement thereby;
causing said latch member on the door to engage with a striker on the vehicle body by closing the door;
bringing said latch member to a closed position; and
thereby actuating said means from said selected position to a locked position by the closing movement of said latch member, thereby putting the door in a locked state.

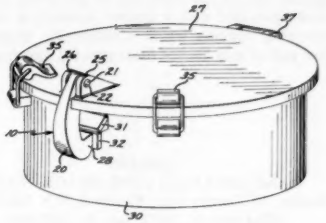
3,844,597

SAFETY LATCH

Charles G. Elrod, 605 N. Louise, Glendale, Calif. 91206; William L. Patrick, 3506 Cerritos Ave., Long Beach, Calif. 90807; Daniel R. Elrod, 605 N. Louise, Glendale, Calif. 91206, and Douglas S. McDougall, 801 E. Union Ave., Fullerton, Calif. 92631

Filed Aug. 29, 1973, Ser. No. 392,533
Int. Cl. E05c *19/16*
U.S. Cl. 292—251.5 **7 Claims**

1. A latching apparatus for providing an increment of free displacement of a container cover, comprising:
a latching lever pivotally suspended at the upper end thereof from the periphery of the cover;
a catch formed on the container in opposing alignment with said latching lever;
a projection formed on the lower end of said lever extending a predetermined increment below said catch for engagement therewith at a predetermined increment of opening of the cover;
weight bias means formed on said lever horizontally distal of the pivotal connection at the periphery of the cover for urging by gravity said projection into engaging alignment with said catch; and



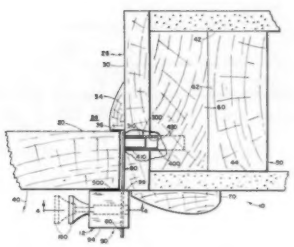
limit means formed on said lever proximate the upper end thereof for limiting the pivotal rotation thereof between a substantially horizontal extended position and a vertical suspended position.

3,844,598

DOOR LOCK

Earl A. Clabaugh, Humboldt, Iowa 50548

Filed Apr. 14, 1972, Ser. No. 244,091
Int. Cl. E05c *19/18*
U.S. Cl. 292—295 **10 Claims**



1. A door lock comprising an anchor plate of a thickness adapting said plate to be received between a door and an inside surface of a door jamb, a stop means removably attached to said plate for engaging a door, said stop means comprising a housing having an anchor plate receiving opening means therein which latter enters from a forward side thereof, said forward side being adapted to face a door, said opening means receiving a portion of said plate, a movable latch, means movably mounting said latch on said housing for movement into and out of positions extending into said opening means, said housing having a latch access opening means therein receiving a portion of said anchor plate and said latch access opening means communicating with said recess to permit said latch to engage said anchor plate, said anchor plate having detent surface means thereon engageable by said latch means for preventing movement of said plate forwardly out of said housing, and forward anchoring means for anchoring the forward end of said anchor plate to said door jamb, and further comprising said forward anchoring means comprising a rigid anchor foot extending transversely to one side of said plate as seen in top plan view, means attaching said foot to said plate sufficiently for preventing said plate from moving rearwardly past said foot, said foot being formed of a different piece of material than said plate and having a forward-to-rearward thickness in top plan view which is substantially greater than the thickness of said plate as seen in top plan view, and in which said anchor plate is substantially planar on

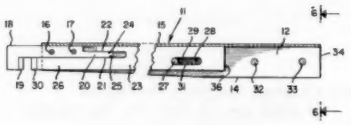
one side and in which said anchor plate and said foot are attached together by means of providing a foot-receiving opening extending from right to left through said anchor plate, said foot-receiving opening having a bevelled wall whereby said opening is of lesser size on said one side of said plate and of a greater size on the other side of said plate, said anchor foot being provided with a portion received in said anchor foot-receiving opening which substantially snugly fits the bevelled wall of said anchor foot-receiving opening.

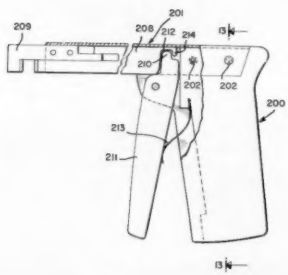
3,844,599

HAND OPERABLE LONG REACH TOOL

Paul Burian, 17 Chester Ave., Elmsford, N.Y. 10523

Filed Oct. 16, 1972, Ser. No. 297,705
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R **16 Claims**





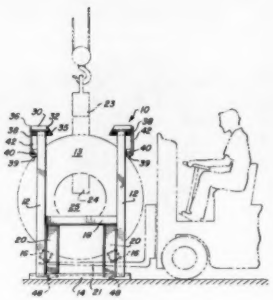
1. A hand-operable long reach tool comprising a hand-grip member, a first elongate member formed with an axially extending channel having a height substantially greater than its width, said first member being mounted at one end portion thereof on said hand-grip member with its longitudinal axis substantially perpendicular to the longitudinal axis of the hand-grip member, the longitudinal extent of said channel member being substantially greater than that of said hand-grip member, a second elongate member of a shape substantially corresponding at least in part to that of said channel for longitudinal and guided movement therein and wholly within the confines thereof, a plurality of work-performing elements at the opposite end portion of said first member and having work-performing surfaces extending longitudinally beyond the opposite end of said first member, one of said work-performing elements being supported by said first member and another of said work-performing elements being movable into and out of engagement with said one work-performing element as a function of longitudinal reciprocation of said second member within said channel, a manually operable lever carried by said hand-grip and having a part integrally formed therewith which in a normal position of the lever engages the second member for longitudinal displacement thereof from a normal position toward said fixed work-performing element upon actuating said lever from said normal to an operative position thereof, and first and second resilient means for respectively returning said lever and said second member to their normal positions in which position said other work-performing element is out of engagement with said one work-performing element, said first resilient means being disposed between a portion of the hand-grip and the lever and the second resilient means being operative within a slot in said second member.

3,844,600

MODULAR STORAGE RACK FOR CYLINDRICAL LOADS

Richard S. Jay, Evanston, Ill., assignor to Jarke Corporation, Chicago, Ill.

Filed Oct. 19, 1973, Ser. No. 407,792
Int. Cl. B66c *1/00*; B65d *21/00*
U.S. Cl. 294—67 D **5 Claims**



1. In a modular storage rack for cylindrical loads of the type formed by a plurality of corner support post members, a pair of opposed parallel bottom nesting rails mounted on and interconnecting opposed pairs of corner support post members, a pair of square support tubes angularly mounted on and interconnecting opposed pairs of support post members and disposed in cross orientation with respect to the parallel bottom angles, the square support tubes being angularly inclined to present inclined flat support surfaces thereby to carry a cylindrical load therebetween, and further including structural channels to rigidify and strengthen the storage rack the improvement comprising in combination,

a plurality of carrying bars, each of said carrying bars being mounted on the top of a corresponding corner support post in parallel orientation with respect to the bottom nesting rails and extending outwardly for a distance with respect to each of the corner support posts, and

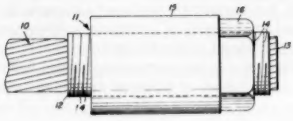
each of said carrying bars presenting a non-flat nestable surface along the top and bottom exposed surfaces thereof, said top surface of each of said carrying bars having the matingly nesting configuration of a corresponding bottom nesting rail,

whereby a series of modular storage racks may be vertically stacked by positioning the bottom nexting rails of one rack on the top surface of the carrying bars of an adjacent rack, such that the carrying bars nest within a corresponding bottom nesting rail, while at the same time presenting a lower surface for said carrying bars which matingly nest with independent carrying hooks to provide a stable and positive engagement of the carrying hook with said carrying bars to facilitate the lifting and transport of said modular storage rack.

3,844,601
CHOKER KNOB FOR LOGGING CABLES AND METHOD OF MAKING SAME

William L. Rochester, Jr., P.O. Box 322, Aberdeen, N.C. 28315

Division of Ser. No. 845,829, July 29, 1969, abandoned. This application Jan. 19, 1972, Ser. No. 219,190
Int. Cl. B66c 1/34; F16g 11/02
U.S. Cl. 294—78 R 9 Claims



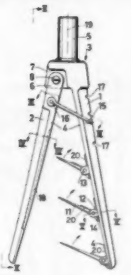
1. In a choker cable of the type wherein a length of wire rope comprising seven strands, each strand comprising a plurality of helically wound steel wires is provided with a choker hook which is slidable along the length of the cable and the ends of the wire rope terminate in a pair of enlarged elements to prevent detachment of the slidable hook, said choker hook being of the type which includes a body portion extending radially away from the wire rope, said body portion terminating at its outer end in fingers for partially encircling one end of the wire rope extending radially outwardly in alignment with the body portion, said fingers also partially encircling one of said enlarged elements for preventing removal of the wire rope from the recess in said radial direction, said body portion also being provided with an enlarged medially disposed transverse opening for the insertion and removal of the enlarged element and end of the wire rope when disposed in a transverse direction, the improvement which comprises a thin sleeve of ductile mild steel radially inwardly swaged in place and surrounding one terminal portion of said wire rope, substantially the entire length of the exterior surface of said sleeve being threaded to receive a choker ferrule, the outside radial dimension of said swaged and threaded sleeve being about 5 percent greater than that of the remainder of the wire rope to enable the insertion of a slidable choker hook onto said wire rope over said sleeve, that portion of the wire rope within said sleeve being radially inwardly deformed and the inner surface of said sleeve being in intimate contact with the exterior surfaces of said wire rope, and an elongated heavy choker ferrule provided with an internally threaded bore engaged with and encircling and confining in place substantially the entire length of said sleeve to provide one of said enlarged elements preventing removal of the inserted hook from one terminal portion of the wire rope.

3,844,602
DEVICE FOR TAKING CAUGHT FISH OUT OF THE WATER

Bengt Johansson, 79 Storforsvagen, Pitea, Sweden (94100)

Filed Mar. 26, 1973, Ser. No. 344,542
Claims priority, application Sweden, Oct. 27, 1972, 3937/72
Int. Cl. A01k 97/14
U.S. Cl. 294—110 A 4 Claims

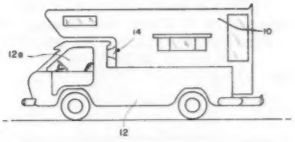
1. A device for gaffing caught fish comprising a shaft-holder, a pair of legs mounted on said shaft-holder for pivotal adjustment relative to each other to establish a selected one of a plurality of different operating angular openings therebetween facing in the direction away from said shaft-holder and into which opening the caught fish is to be brought, means for preventing the angle between said legs from exceeding the one selected, and a plurality of spear-like fish penetrating means pivotally connected to and located in longitudinally spaced relation along one of said legs, said plurality of spear-like fish penetrating means extending into the opening between said legs and being spring loaded to an initial stopped position at an acute angle with the leg to which they are connected opening in the direction of said shaft-holder, said plurality of spear-like fish penetrating means being pivotally movable from said stopped position in the direction of said shaft-holder by the caught fish as it is initially gaffed by a downward push on the device and thereafter penetrating the fish by pivotal movement in the opposite direction by an upward pull on the device.



3,844,603
BOOT FOR CAMPER-TRUCK COMBINATION

Robert M. Bjork, and Steven Robert Bjork, both of 1901 Topeka Dr., Northridge, Calif. 91324

Filed July 23, 1973, Ser. No. 381,692
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC 4 Claims

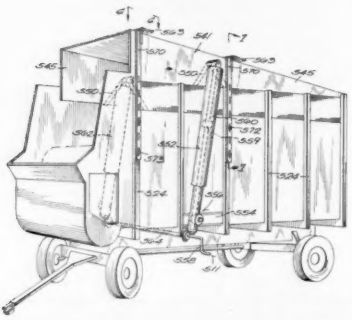


1. A boot assembly intercoupling the forward end of a camper to the rear end of a truck cab, and extending into a window aperture in the rear wall of the cab and into a window aperture in the forward wall of the camper, said boot assembly comprising; a tubular casing formed of flexible material and having a first open end and a second open end; a rigid metallic frame contoured to the shape of the window aperture in the rear wall of the cab and having an L-shaped cross-section to define a first lip portion in the plane of the window aperture and a second lip portion perpendicular to said plane, said frame being positioned in the first open end of said casing member, with the material of said casing member extending around said second lip portion of said frame and adhesively bonded thereto; and a resilient gasket extending around the perimeter of said frame and having a slot therein receiving said first lip portion of said frame, said gasket serving to mount said frame in the window aperture in the rear wall of the cab.

3,844,604
FORAGE WAGON WITH HINGED ROOF

John E. Kasten, 136 Concord Ln., West Bend, Wis. 53095

Continuation-in-part of Ser. No. 36,772, May 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 847,909, Aug. 6, 1969, Pat. No. 3,572,811. This application Aug. 14, 1972, Ser. No. 280,235
Int. Cl. B62d *33/08*
U.S. Cl. 296—26 11 Claims

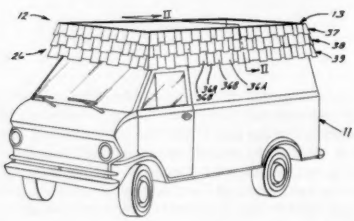


1. The combination of a roof having means adapted for hinging said roof to a support for swinging movement relative to said support about an axis, transverse members extending from the sides of said roof, posts including respective surfaces adapted for supporting engagement with said transverse members, means for connecting said posts to the support and for guiding movement of said posts in a direction transversely of said axis, said surfaces and said transverse members cooperating so as to support said roof and so as, in response to movement of said posts transversely of said axis, to afford relative movement between said members and said surfaces in the direction perpendicular to said axis during tilting of said roof about said axis.

3,844,605
VEHICLE ROOF CONSTRUCTION

John W. Payne, 1116 W. Centre Ave., Pontage, Mich. 49002

Filed Nov. 6, 1972, Ser. No. 304,077
Int. Cl. B62d *25/06*
U.S. Cl. 296—137 R 9 Claims



1. A roof construction adapted for attachment to the roof of a vehicle, particularly a van, comprising:

a box-like structure having a pair of opposed substantially rectangular side panels and a pair of opposed substantially rectangular end panels extending between and fixedly inteconnected to said pair of side panels;

each said panel being of substantially the same vertical height and terminating in an elongated upper edge which extends substantially horizontally, the upper edges of all of said panels lying within a common substantially horizontal plane, and the lowermost edge of said panels being positionable at an elevation similar to the elevation of the roof of the vehicle and respectively disposed adjacent an edge of said roof;

each said panel being disposed substantially vertically and having a base frame;

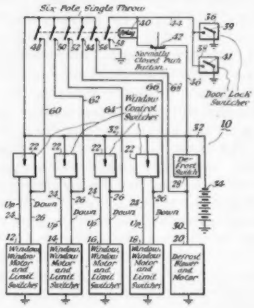
each said panel further having a plurality of shingles fixedly secured thereto; and

mounting means fixedly connected to at least two of said panels for permitting said roof structure to be fixedly secured to the roof of a vehicle, said mounting means being positioned within the interior of said box-like roof structure so as to be substantially hidden from view when said roof structure is mounted on said vehicle.

3,844,606
VEHICLE HEAT DISSIPATING AND/OR INCLEMENT WEATHER CONVENIENCE WINDOW OPERATING SYSTEMS

Paul M. Hankison, 106 Oakwood Rd., McMurray, Pa. 15317

Filed Oct. 13, 1972, Ser. No. 297,227
Int. Cl. B60j *1/00*
U.S. Cl. 296—146 9 Claims



1. A vehicle window operating system comprising a plurality of motors for powered vehicle windows having actuating switches for said motors, normally open switch means mounted for external access on an exterior surface of the vehicle, said switch means being connected to an energizing circuit coupled to said window motors in by-passing relation to said motor actuating switches, and a vehicle blower motor coupled to said operating system such that said energizing circuit is connected to said blower motor for aid in dissipating accumulated heat in a passenger compartment of said vehicle.

3,844,607
RECLINING CHAIR WITH TWO-PART BACKREST

Frank M. Re, Holyoke, Mass., assignor to Dual Manufacturing and Engineering Incorporated, Holyoke, Mass.

Filed Mar. 1, 1973, Ser. No. 336,958
Int. Cl. A47c *1/037*
U.S. Cl. 297—61 2 Claims

1. A reclining chair comprising:

a stationary frame and a body-supporting unit including a seat and a two-part backrest, the body-supporting unit being mounted on the stationary frame for disposition between an upright sitting position and an intermediate reclined position and a fully reclined position, and reclined positions therebetween,

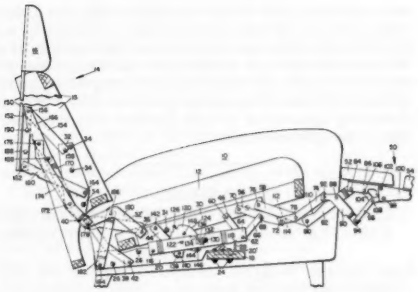
the two-part backrest comprising operatively connected upper and lower backrest parts,

a legrest mounted on the body-supporting unit for movement between retracted and extended positions,

means for moving the legrest in concert with movement of the body-supporting unit,

means for projecting the upper backrest part from a retracted position within the lower backrest part to an extended position overlying said lower backrest part upon movement of the body-supporting unit from upright sitting position to said intermediate reclined position and for retaining said upper backrest part in extended position during movement of the body-supporting unit between said intermediate and fully-reclined positions and reclined positions therebetween, and for returning the upper backrest part to said retracted position upon movement from said intermediate reclined position to upright sitting position,

the means for moving the upper backrest part comprising a pair of parallel pivot links pivotally connecting between the upper and lower backrest parts, first and second



toggle links, and first toggle link being pivoted to the upper backrest part, the second toggle link being pivoted to the first toggle link and to the lower backrest part, a stop on the upper backrest part engageable by the first toggle link for precluding overtravel of said first and second toggle links whereby these links assume a toggled or locked position on movement to reclined positions, a connecting link, a seat link and a drive link, the connecting link being pivoted to the first toggle link and to the seat link, the seat link being pivoted to the seat, the drive link being pivoted to the stationary frame and to the seat link,

all for guiding the upper backrest part in a generally curvilinear direction in its movement relative to the lower backrest part, with the toggle links locking the upper and lower backrest parts against movement relative to each other during movement of the body-supporting unit between said intermediate and fully reclined positions.

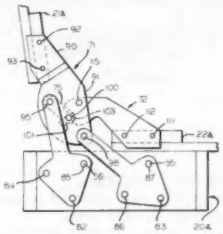
3,844,608

MOBILE HOME LOUNGE

Gerald Freedman, Wilmette, Ill., assignor to Freedman Seating Company, Evanston, Ill.

Filed June 22, 1972, Ser. No. 265,356
Int. Cl. A47c *1/032*
U.S. Cl. 297—92 **10 Claims**

1. A mobile lounge seat comprising seat and back cushions supported by a seat base anchored to the floor of a vehicular body, a pair of oppositely disposed hinge means pivotally mounted on opposite ends of said seat base for selectively positioning said seat and back in either a forward facing or a reverse facing position, responsive solely to the pivoting of said hinge means, latch means including an actuating bar extending traversely across said seat base substantially midway between said ends of said seat base and substantially perpendicular to the axis of pivot of said hinges, means associated with each of the opposite ends of said bar for commonly controlling said latch means from at least two different locations on opposite sides of said seat base for positively locking both of said pair of hinge means to said seat base when said cushions are in a seat position so that said seat may not accidentally move out of a selected position, hinge plates mount-



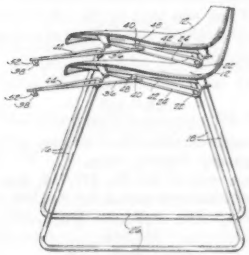
ing said seat and back cushions on said hinge means, latch means for selectively immobilizing said plates with respect to each other whereby said cushions may be held in a seat position or allowed to move to a horizontal bed position, and protection frame means connected to said hinge plates for supporting the back of said cushions and for protecting an occupant of said seat from objects hurled into the back of said seat.

3,844,609

FOLDING BOOKRACK FOR STACKABLE CHAIRS

Robert J. Bomber, 565 Peters St., Green Bay, Wis. 54302

Filed Dec. 13, 1973, Ser. No. 424,402
Int. Cl. A47c *7/62*
U.S. Cl. 297—192 **6 Claims**

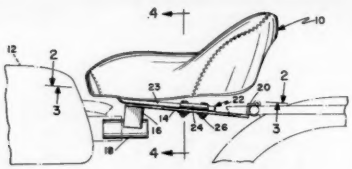


1. A folding bookrack for use in combination with a stackable chair, said bookrack comprising a substantially flat rack which is small enough to fit in the space between the four legs of said chair, four supporting links each loosely pivoted at its lower end to said rack at a corresponding lower pivot point for suspending the rack from the underside of said chair, each of said supporting links being loosely pivoted at its upper end to the underside of the chair at a corresponding upper pivot point, and said pivot points being so positioned as to provide an over-center locking action when said rack is swung upwardly as high as it will go toward the underside of said chair.

3,844,610
MOTORCYCLE SOLO SEAT

Gregory J. Adams, 47 D St., Chula Vista, Calif. 92010

Filed Sept. 7, 1973, Ser. No. 395,062
Int. Cl. B62j 1/02
U.S. Cl. 297—213 3 Claims



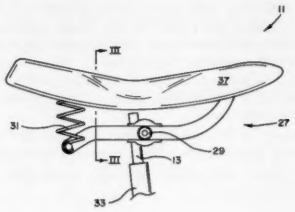
1. A motorcycle seat comprising,
a unitary seat shell of rigid material recessed in its upper surface to provide the seat shape,
the outer edges of said seat shell are curved downwardly forming an outer band surface,
a layer of thick foam padding secured to and covering the upper surface of said seat shell and said band surface,
a metal plate imbedded in a center portion of the wall of said seat shell forming a flat bottom surface on said shell, a rigid mounting plate for mounting said seat on a motorcycle,
spring means having a coil spring with a pair of diverging legs for supporting said seat shell on said mounting plate, each of said legs having lateral spaced members,
first connecting means for connecting one of said legs to said mounting plate with a major portion of the leg in substantially flat abutment against the mounting plate for providing a flat surface contact for rigid, non-vibrating support,
first connecting means for connecting one of said legs to said mounting plate,
second connecting means for connecting the other of said legs to said seat shell,
first adjustment means for adjusting the longitudinal position of said one of said legs to said mounting plate for longitudinally positioning said seat relative to the motorcycle,
and second adjustment means for adjusting the longitudinal position of said seat shell on the other of said legs for adjusting the resilient support force of said seat shell.

3,844,611
CYCLE SADDLE

Michael H. Young, Memphis, Tenn., assignor to Troxel Manufacturing Company, Mascon, Tenn.

Continuation-in-part of Ser. No. 277,759, Aug. 3, 1972, abandoned, Continuation-in-part of Ser. No. 255,348, May 22, 1972, abandoned. This application Jan. 5, 1973, Ser. No. 321,545
Int. Cl. B62j 1/18
U.S. Cl. 297—214 14 Claims

1. A saddle for cycles and the like comprising a rigid base, a resilient cover disposed over said base and being fixedly attached thereto, and a substantially pear-shaped resilient pad disposed between said cover and said base, said base including a substantially pear-shaped crown portion having an intermediate portion and a forwardmost end, said crown portion being symmetrical about its longitudinal axis, said crown portion and said pad substantially corresponding in shape, said cover including a substantially pear-shaped flat portion disposed above said crown portion of said base, said crown portion including a shelf portion substantially horizontally disposed at a predetermined level and said crown portion including a pair of rearwardly disposed concavities depressed below the level of said shelf portion and being located on either side of and in symmetrical relationship to the longitudinal axis of said crown portion at predetermined places to correspond to the location of the ischial bones of a rider resting on the saddle with his legs extending downwardly on opposite sides of said forwardmost end with said concavities coacting with said pad to distribute the weight of the rider uniformly outwardly to areas adjacent

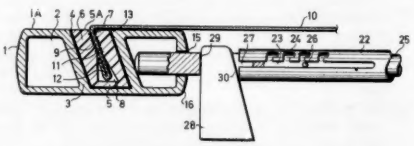


said concavities, said concavities each having rims extending respectively at least halfway around said concavities for coacting with said pad to support portions of the rider spaced radially outwardly from the ischial bones, said flat portion of said cover above said rearward concavities being substantially flat when not influenced by the weight of the rider whereby the distracting appearance of said rearward concavities of the base is normally not apparent.

3,844,612
ARRANGEMENT IN SEATING FURNITURE OR SEATS FOR ATTACHING SEAT AND BACK SUPPORTING ELEMENTS

Kjell Christian Borggren, Johannesbergsgatan 30, 703 60 Orebro, and Nils Erik Soderstrom, Porla Grand 48, 702 28 Orebro, both of Sweden

Filed Feb. 8, 1973, Ser. No. 330,525
Claims priority, application Sweden, Mar. 14, 1972, 3230/72
Int. Cl. A47c 7/00, 7/02
U.S. Cl. 297—445 9 Claims



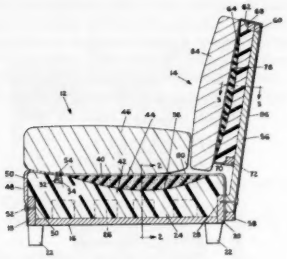
1. An arrangement in seating furniture or seats for attaching flexible seat and back supporting elements, said furniture or seat including two frame or rail members forming opposite side portions of said seating furniture or seat, at least one recess in each of said frame or rail members, said recesses extending at least partially in the longitudinal direction of the said frame and rail members and opening into one of two opposite sides thereof, wherein a complementary ledge member is introducable into each of said recesses radially to the longitudinal axis thereof, a groove in said ledge member and extending in the longitudinal direction thereof in a plane diverging outwardly from the middle plane of said seating furniture or seat, a side marginal portion of a flexible back and seat supporting material anchored in said groove and means to increase the spacing between said side portions to put the flexible seat and back supporting elements under tension after anchoring said marginal portions in said grooves.

3,844,613

SEATING CONSTRUCTION

Alvin S. Waldorf, Rt. 2, Fenwick, Mich. 48834

Filed Jan. 8, 1973, Ser. No. 287,265
Int. Cl. A47c 7/14, 7/20
U.S. Cl. 297—452 8 Claims



1. A seating foundation for use in upholstered furniture wherein loose cushions are placed over the base and a soft cushion is provided at a backrest, said seating foundation having a seat portion and a backrest portion, said seat portion comprising:

a molded base member formed of a non-deformable, relatively soft, foamed material;

a slot formed in an upper front portion of the upper surface of said base member a spaced distance from a front edge thereof and extending in a direction parallel to said front edge;

a block of nail-retaining material in said slot;

means for retaining said block within said slot; and

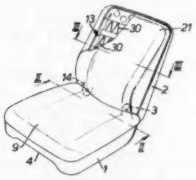
a fabric material secured to said block at one end portion, drawn over the front edge of said base cover, and secured at another end portion to an underside of said molded base member, so that said fabric covers the front surface of said base member.

3,844,614

SEAT CUSHION

Frederick William Babbs, Nottingham, England, assignor to Cox of Watford Limited, Nottingham, England

Filed Mar. 29, 1973, Ser. No. 345,973
Claims priority, application Great Britain, Mar. 30, 1972, 15105/72
Int. Cl. A47c 3/00, 7/02; B60n 1/06
U.S. Cl. 297—452 16 Claims



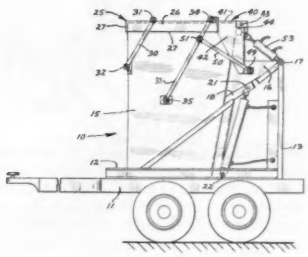
1. A seat comprising a relatively rigid frame, the frame defining a well for a cushion and formed with a rim around the well, the rim having a hook-like cross section, a cushion having a flexible external skin, soft flexible padding fixed within the skin, an engagement section fixed around the edge of the skin, and a neck of the skin between the edge of the padding and the engagement section permitting the engagement section to be manipulated in relation to the padding, the cushion being removably secured to the frame by engagement of the engagement section in the rim of hook-like cross section, and a locking strip press-fitted into a gap between the engagement section and the rim preventing dis-engagement of the engagement section.

3,844,615

HYDRAULIC OPERATED DUMPING SPOUT AND COVER FOR SIDE DUMP BOX

Robert Duwayne Anderson, Murdock, Minn., assignor to TCI, Inc., Benson, Minn.

Filed May 22, 1973, Ser. No. 362,748
Int. Cl. B65g 67/50
U.S. Cl. 298—10 7 Claims



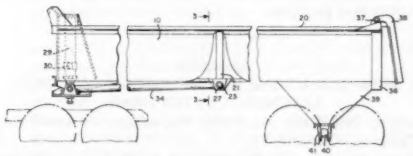
1. A dumping box tiltable about an axis extending along one side thereof and above the lower portions of the box to permit dumping material from the box along one upper edge, including a dumping spout member mounted adjacent said one upper edge having a wall positionable in a first spout position to extend the effective dumping edge of the box outwardly from said one upper edge, a cover member for said box, means to mount said cover member on said box for movement relative to said box from an open to a closed position, linkage means connected to said cover member and to said dumping spout member, power actuating means, and means to connect said power actuating means to control movement of said dumping spout member and said cover member between their respective positions through said linkage means.

3,844,616

DUMP TRUCK HAVING AN OPEN SHELL IN THE SHAPE OF ONE-HALF OF AN ELLIPSE

Douglas B. Acker, 655 Eastwood Way, San Francisco, Calif. 94941

Filed July 16, 1973, Ser. No. 379,783
Int. Cl. B65g 67/50
U.S. Cl. 298—10 3 Claims



1. In a dump truck the combination comprising a body having an elongated open shell with a cross section that is approximately the shape of one-half of an ellipse, the upper parts of the long sides of said shell comprising narrow substantially straight walls, a front wall having the shape of one-half of an ellipse welded to the front of said open shell, a top rail

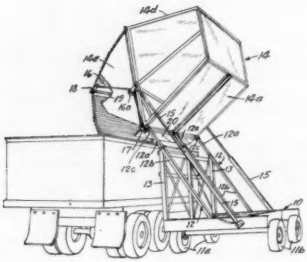
of polygonal shape having a bottom portion thereof welded to the top edges of said front wall and said sides, said top rail being turned so that one corner thereof is uppermost to prevent small pieces of rock from resting thereon, a door at the rear of said shell, hinge means attaching said door to said shell, a plurality of wheels and means supporting said shell, a plurality of wheels and means supporting said body on said wheels.

3,844,617

DUMP BOX FARM WAGON

Wilmer A. Kostman, Barnesville, Minn., assignor to Tegtmeier & Sons, Inc., West Fargo, N. Dak.

Filed July 31, 1972, Ser. No. 276,719
Int. Cl. B60p 1/34
U.S. Cl. 298—1 **5 Claims**



1. A wheeled dump box comprising as essential elements only a supporting structure having sides and ends,

wheels mounted under the sides of said supporting structure,

a plurality of spaced apart upwardly and outwardly sloping extensible strut members mounted on said supporting structure and when in retracted position terminating at their upper ends substantially adjacent a vertical plane through wheels on one side of said structure, but being extensible upwardly and also laterally a substantial distance outwardly beyond said plane,

a dump box unit having ends, sides and bottom and pivotally mounted along one upper side edge to the upper ends of said extensible strut members,

a single pair of hydraulic actuators connected at their upper ends to the upper portions of the respective ends of the box and at their lower ends to the respective end portions of said supporting structure, said actuators forming the sole means for initially projecting said strut members into their extended position laterally outwardly a substantial distance beyond the vertical plane through the wheels to substantially overlie the adjacent edge of a truck body into which the box is to be dumped and for thereafter swinging said box into dumping position when said extensible strut members have been projected upwardly into extended position.

3,844,618

MINING MACHINE HAVING ROTARY MOTOR EXTENDED CUTTER HEAD

Frank A. Delli-Gatti, Jr., Amity, Pa., assignor to Lee-Norse, Company, Chalerni, Pa.

Division of Ser. No. 243,973, April 14, 1972,. This application Oct. 9, 1973, Ser. No. 404,296
Int. Cl. E21c 27/24
U.S. Cl. 299—64 **8 Claims**

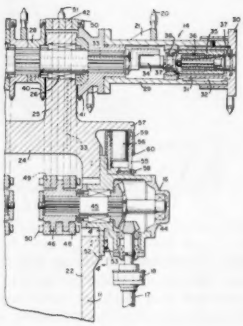
1. A mining machine including:

a mobile chassis carrying a movable boom extending forwardly therefrom;

a cutter head rotatably mounted on said boom;

said cutter head including a drum portion and an end portion movably mounted in said drum portion for telescoping travel inwardly and outwardly relative to said drum portion; and

power means for moving said end portion inwardly and outwardly including a fluid driven rotary motor mounted in said drum portion and driving thread means interconnected between said end portion and said drum portion; said thread means including a nut driven by said motor and a screw connected to said end portion; and



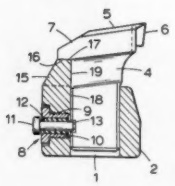
at least one of the connections between said motor and nut, and screw and end portion, including a universal joint allowing the thread means to move slightly relative to said cutter head in seeking proper alignment between the nut and screw.

3,844,619

CUTTER DEVICES FOR USE IN MINERAL MINING

Herbert Haller, Gelsenkirchen-Buer, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Continuation-in-part of Ser. No. 244,791, April 17, 1972, abandoned. This application June 26, 1972, Ser. No. 266,148
Claims priority, application Germany, Apr. 30, 1971, 2121314
Int. Cl. E21c 25/46
U.S. Cl. 299—92 **2 Claims**



1. A cutting device for use in mining, comprising: a cutter member having an elongated shank and a head portion connected to the upper end of said shank by a transition portion integral with both said shank and said head portions; said head portion extending transversely in relation to both said shank and transition portion, with a cutting edge protruding for-

wardly from one end thereof and a projection protruding rearwardly from the opposite end thereof; a holder member having a top surface with a recess therein, said recess being suitably dimensioned to receive said shank in an operative position with said transition portion protruding upwardly above said top surface; a neck tapering upwardly from the top surface of said holder member, the width of said neck in a direction transverse to said head portion being equal to or less than the width of said transition portion, said neck having an inner surface engageable with a rear surface of said transition portion, and an upper surface engageable with the underside of said projection at a plane which is spaced vertically above that of said top surface and adjacent to said cutting edge; and locking means in communication with said recess for engaging and retaining said shank in said operative position.

3,844,620

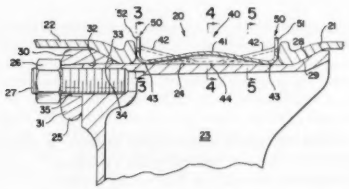
DUAL RIM SPACER

William Dean Walther, Dayton, Ohio, assignor to Dayton-Walther Corporation, Dayton, Ohio

Filed Jan. 25, 1974, Ser. No. 436,472

Int. Cl. B60b *11/06*

U.S. Cl. 301—13 SM **2 Claims**



1. A non-compressible spacer for use in mounting dual rims on a vehicle wheel,

characterized in that,

said spacer has an annular medial portion having a plurality of radially outwardly directed substantially uniformly spaced undulations comprising marquise-shaped areas alternating with apexly opposed cone-shaped areas, the radially inner dimensions of said spacer being such that the space between said marquise-shaped areas and said cone-shaped areas will slidingly engage and seat on the load-bearing surface of a wheel for dual rims.

3,844,621

DEVICE FOR SPREADING ORIENTED STOCKINGS

Gennady Petrovich Tiranov, proezd Shokalskogo, 31, korpus 2, kv. 78; Georgy Alexandrovich Kuligin, ulitsa Bolshaya Pochtovaya, 18/20, korpus 10, kv. 41, and Karen Jurievich Dzhermakian, ulitsa Taldomskaya, 15, kv. 27, all of Moscow, U.S.S.R.

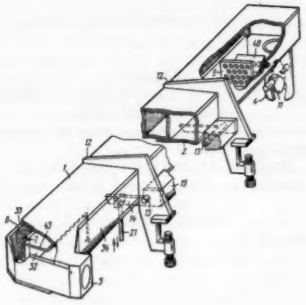
Filed Aug. 2, 1972, Ser. No. 277,254

Claims priority, application U.S.S.R., Aug. 4, 1971, 1689976; Feb. 21, 1972, 1745101

Int. Cl. B65g *47/24*

U.S. Cl. 302—2 R **11 Claims**

1. A device for spreading oriented stockings comprising a chamber having an end and side walls; a dumping bottom provided in said chamber to discharge the spreaded stockings therefrom; an inlet duct provided for this chamber to deliver stockings thereinto through the outlet openings of said duct; an outlet duct provided for the chamber for drawing off air from said chamber and the inlet duct; an arrangement for catching the end of a stocking positioned close to said inlet duct and made in the form of a strip disposed along said walls of the chamber of said strip to divide the air flow being drawn off into two streams; a retaining baffle installed across said chamber near the inlet duct between said strip and one of the walls of said chamber and which is adapted to pass air therethrough and through which is passing one of said streams of the air being drawn off, said stream pressing one end of the stocking against said baffle; another stream turning the stocking inside the space confined by said strip and the other side



wall of said chamber; a safety baffle installed at the outlet of said chamber to prevent ejection of the stocking into said outlet duct; said outlet opening of the inlet duct is so disposed in relation to said retaining baffle that the flow of the air being drawn through is directed along the wall to which the retaining baffle is adjoined; and a means for drawing off air from said ducts and chamber.

3,844,622

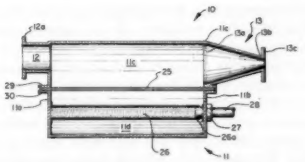
FLUIDIC PUMP

Joseph P. Bingham, 2134 Lambourne Ave., Salt Lake City, Utah 84109

Filed Mar. 19, 1973, Ser. No. 342,840

Int. Cl. B65g *53/20*, *53/50*

U.S. Cl. 302—45 **6 Claims**



1. A fluidic pump comprising

means defining a closed cylindrical chamber;

an air permeable means arranged in said chamber and separating an upper semicylindrical section of said chamber from a lower semicylindrical section thereof, said permeable means provided for passing air therethrough; a chamber inlet arranged in said chamber above said air permeable means through which chamber inlet granular materials pass onto said air permeable means;

means for supplying a flow of granular materials to said chamber inlet;

a porous tube, closed at one end, centered in the lower semicylindrical section of the chamber below said air permeable means, and extending the length of said air permeable means for distributing an air flow in said chamber;

a pneumatic source connected to the other end of said porous tube;

a chamber exhaust opening arranged in said chamber above said air permeable means opposite to said chamber inlet; an inwardly tapering exhaust line connected at its widest

end to said chamber exhaust opening and tapering inwardly to a lesser diameter at its other end, said exhaust line receiving a fluidized flow of a mixture of air and granular materials therein; and

a transport tube means connected on one end to the smaller diameter end of said exhaust line means for passing the consolidated granular materials therethrough.

3,844,623

ANTI-SKID CONTROL MEANS FOR AIR PRESSURE BRAKING SYSTEMS

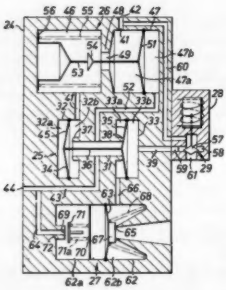
David Parsons, and Mervyn Packer, both of Tachbrook Rd., Leamington Spa, England

Filed Feb. 20, 1973, Ser. No. 333,646

Claims priority, application Great Britain, Feb. 21, 1972, 7920/72

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **8 Claims**



1. A valve mechanism for insertion in a fluid pressure braking system including a source of air under pressure, brake operating means, a control valve controlling the connection of said brake operating means to said air pressure source, driver operated control means for said control valve, and a skid sensing device, said valve mechanism when inserted in such a system between said control valve and the brake operating means being controllable by said skid sensing device and controlling the connection of said brake operating means to said control valve and to exhaust, wherein the improvement comprises said valve mechanism comprising:

i. a main passage adapted to provide a connection between the control valve and the brake operating means, and including upstream and downstream portions;

ii. a first valve interposed between said upstream and downstream passage portions and having first and second positions in which it respectively connects said upstream passage position to said downstream passage portion and separates said passage portions one from the other whilst connecting the downstream passage portion to an exhaust passage;

iii. a second valve interposed in said upstream portion of said main passage;

iv. means responsive to pressure in the downstream portion of said main passage to operate said second valve to provide a degree of restriction of flow in said main passage decreasing with increase of the pressure in said downstream portion of said main passage; and

v. a pilot valve operated by the skid sensing means to control the action of air pressure from the control valve on operating means for said first valve so that said first valve is held by said air pressure in its first position during normal braking and is urged by said air pressure to its second position when a skid is sensed.

3,844,624

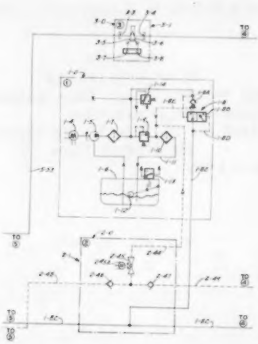
BRAKE SYSTEMS

Roger D. Jones, Ramsey, N.J., assignor to Abex Corporation, New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,850

Int. Cl. B60t *8/18*

U.S. Cl. 303—21 A **30 Claims**



1. In a braking system where brake pressure is applied by fluid-operated pistons in related brake cylinders:

an accumulator for storing fluid under pressure;

a reservoir for storing fluid not under pressure;

a pump means communicating with said accumulator and said reservoir for delivering fluid from said reservoir to charge said accumulator with fluid;

a continuously variable directional valve interposed between said brake cylinders, said accumulator, and said reservoir, said directional valve being settable in a first position allowing fluid from said accumulator to communicate with said brake cylinders, and being settable in a second position allowing fluid from said brake cylinders to communicate with said reservoir, and a null position blocking flow between the accumulator and brake cylinders and between the brake cylinders and the reservoir;

a control system line communicating with said accumulator, said reservoir and with said directional valve, capable of providing a first pilot pressure urging said directional valve to said first position, and capable of allowing flow of fluid from said accumulator to said reservoir;

a main control valve interposed in said control system line to variably restrict or enlarge flow through said control system line from said accumulator to said reservoir to vary said first pilot pressure;

an orifice interposed between said directional valve and said brake cylinders;

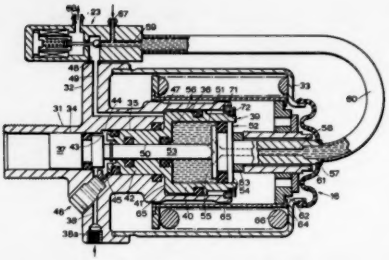
a release means capable of providing a second force in opposition to the force of said first pilot pressure, and urging said directional valve to said second position;

a control means which controls said main control valve so that when brake pressure is to be applied, said main control valve restricts flow through said control system line thereby increasing the force from said first pilot pressure above the force from said release means causing said directional valve to be set in said first position, and so that when brake pressure is to be released, said main control valve enlarges flow through said control system line thereby decreasing the force from said first pilot pressure below the force from said release means causing said directional valve to be set in said second position.

3,844,625
FLUID PRESSURE BRAKING FOR VEHICLES

Brian Ingram, Balsall, and David Anthony Harries, Shirley, both of England, assignors to Girling Limited, Birmingham, England

Filed Sept. 10, 1973, Ser. No. 395,556
Claims priority, application Great Britain, Sept. 26, 1972, 44311/72; May 23, 1973, 24732/73
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **6 Claims**

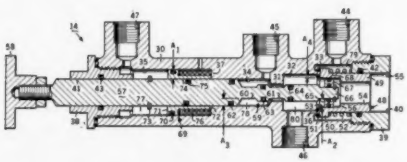


1. A fluid pressure braking system for vehicles comprising an actuator for a wheel brake, means for applying fluid under pressure to said actuator, and skid control means sensitive to the deceleration of the braked wheel for reducing the pressure applied to the actuator when the deceleration exceeds a threshold value, wherein said actuator includes two actuating members, the first member subjected to fluid pressure controlled by said applying means and the skid control means, and the second member spring-biassed to engage said first member to apply the brake but normally held out of engagement by fluid pressure controlled by a parking valve which is operated to apply the wheel brake for parking purposes.

3,844,626
CONTROL VALVE AND SYSTEM

Raymond F. Stelzer, Bel Nor, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Aug. 5, 1971, Ser. No. 169,441
Int. Cl. B60t *15/16*
U.S. Cl. 303—68 **13 Claims**



1. A control valve comprising a housing having pressure fluid flow passage means therein including first and second passages respectively subjected to separate first and second supplied fluid pressures, and a passage portion interconnecting said passages in parallel flow relation, first and second valve seats on said housing about said first and second passages and between said first and second passages and said passage portion, respectively, a first valve member movable in said housing for engagement with said first valve seat, first spring means urging said first valve member toward engagement with said first valve seat to interrupt communication between said first passage and passage portion, an exhaust passage in said first valve member connecting with said passage portion, a third valve seat on said first valve member about said exhaust passage, a reciprocal rod member movable in said housing including spaced second and third valve members for respective engagement with said third valve seat and a fourth valve member for engagement with said third valve seat, a first abutment for driving engagement with said first valve member, and a force receiving portion extending exteriorly of said housing, said rod member being movable in response to an applied force in one direction on said force receiving portion between one position disengaging said second and third valve members from said second valve seat to effect the application of the second supplied fluid pressure through said second passage and passage portion and engaging said fourth valve member with said third valve seat to close said exhaust passage and another position engaging said second valve member with said second valve seat to isolate the second supplied fluid pressure in said second passage and effecting the driving engagement of said first abutment and first valve member to concertedly drive said first valve member against said first spring means toward a position disengaged from said first valve seat and effecting the application of the first supplied fluid pressure through said first passage and passage portion, said rod member also being movable in response to another applied force in a direction opposite to the one direction on said force recieving end toward a venting position disengaging said second valve member from said second valve seat and engaging said third valve member therewith to maintain the second supplied fluid pressure isolated in said second passage and disengaging said fourth valve member from said third valve seat to open said exhaust passage and exhaust the applied fluid pressure from said passage portion, said first spring means urging said first valve member in following relation with said rod member upon the movement thereof in the opposite direction to re-engage said first valve member with said first valve seat isolating the first supplied fluid pressure in said first passage prior to the disengagement of said fourth valve means from said third valve seat, a piston movable in said housing and defining therewith an expansible fluid pressure chamber subjected to the second supplied fluid pressure, said rod member extending through said chamber and piston, a second spring engaged with said piston and opposing fluid pressure expansion of said chamber, a second abutment on said housing for engagement with said piston, said piston being movable against said second spring toward engagement with said second abutment in response to the second supplied fluid pressure in excess of a predetermined value in said chamber acting on said piston, and a third abutment on said rod member in said chamber for driving engagement with said piston, said piston being movable in response to the force of said second spring to effect the driving engagement with said third abutment and concertedly drive said rod member to its venting position independently of an applied force on the force receiving end thereof when the second supplied fluid pressure in said chamber acting on said piston is less than the predetermined value.

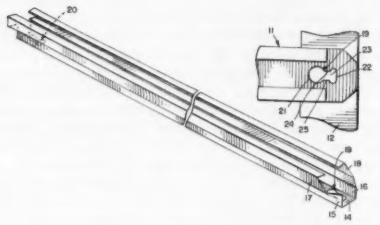
3,844,627
DRAWER GUIDE

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035

Filed Nov. 10, 1972, Ser. No. 305,354
Int. Cl. F16c *21/00*
U.S. Cl. 308—3.6 **1 Claim**

1. A drawer guide adapted to be mounted on a furniture piece to guide the movement of a drawer positioned over front and rear parting rails in said furniture piece comprising an elongated unitary member having a general channel shape in cross section, said channel shape including a bottom wall and side walls extending upwardly therefrom, said bottom wall having a pair of openings therein spaced longitudinally thereof to be generally aligned with said front and rear parting rails, each opening being relatively elongated longitudinally of said guide and at corresponding opening ends being transversely enlarged so as to pass the head of a wood screw while at the other corresponding ends having a contour to receive with slight relative movement the shank of said wood screw but not

to pass the head thereof, each opening intermediate the ends thereof having a slot portion defined by generally parallel sides spaced apart sufficiently only to pass said shank, each opening including arcuate portions at each end with the arcuate diameter measured transversely of the guide being larger



at one end than at the other, the intermediate portion of said opening being of a width less than the smaller of said diameters, the length of said intermediate portion being at least 60 percent of the width thereof whereby when screws are inserted into said parting rails, said guide must be moved longitudinally before said guide is laterally adjusted.

3,844,628

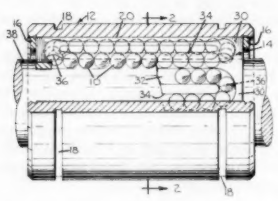
ANTI-FRICTION BALL BEARING ASSEMBLY

Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1973, Ser. No. 334,707

Int. Cl. F16c *29/06*

U.S. Cl. 308—6 C **8 Claims**



1. An anti-friction ball bearing assembly comprising an outer sleeve and an inner sleeve concentrically fitting within said outer sleeve, said inner sleeve having a central opening for the passage of a shaft therethrough, the inner sleeve having a number of tracks defining paths for the circulation of balls between said sleeves and said shaft during relative movement between said shaft and said bearing assembly, the outer surface of the inner sleeve being polyhedronal in shape, the inner surface of the outer sleeve being provided with a number of guideways, the intersections of the plane portions defining the outer surface of the inner sleeve registering with said guideways, said inner surface of the outer sleeve is further provided with a number of axially extending channels adapted to receive a plurality of insertable members each having a concave raceway surface thereon aligned with said tracks providing a bearing support for said balls while said balls are in their loaded state.

3,844,629

LINEAR MOTION BALL BEARINGS

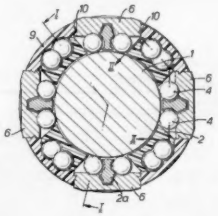
Derrick John Haines, Felsted, near Dunmow, England, assignor to Ransome Hoffman Pollard Limited, Essex, England

Filed Aug. 9, 1973, Ser. No. 386,887

Claims priority, application Great Britain, Aug. 15, 1972, 38054/72

Int. Cl. F16c *29/06*

U.S. Cl. 308—6 C **9 Claims**



1. A linear ball bearing for axial movement along a round shaft, said bearing comprising a cylindrical sleeve ball retainer provided with a plurality of raceways, a plurality of balls substantially filling each raceway and a plurality of load-carrying plates supported by said ball retainer, each of said raceways extending transversely substantially tangentially with respect to said shaft, each of said raceways having an axially extending load bearing portion and an axially extending load free portion interconnected at each axial end by a respective curved portion, said balls being in contact with said shaft and a respective one of said load-carrying plates when in said load bearing portions and being out of contact with both said shaft and any of said load-carrying plates when in said load free portions, wherein each of said load-carrying plates contacts said balls in said load bearing portions of a pair of adjacent raceways.

3,844,630

DEVICE FOR THE SOFT AND ELASTIC BEARING SUPPORT OF SHAFTS ROTATING AT HIGH SPEEDS

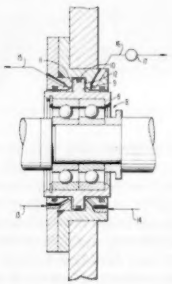
Karl Lechner, Heidestrasse 15, 8031 Grobenzell, Germany

Filed Aug. 31, 1973, Ser. No. 393,271

Claims priority, application Germany, Aug. 31, 1972, 2242852

Int. Cl. F16c *27/00*

U.S. Cl. 308—184 **16 Claims**



1. Apparatus for supporting a rotatable shaft comprising:

bearing means including means for directly rotatably supporting a shaft,

an inner bearing body directly supporting an outer portion of said bearing means, said inner bearing body including an annular flange extending radially outwardly,

an outer bearing body in surrounding relationship to said inner bearing body with said annular flange projecting into an annular recess of said outer bearing body, said inner and outer bearing bodies being normally spaced from one another in the radial direction and the walls of said recess being spaced axially from respective axially facing surfaces of said annular flange to form first and second partial pressure medium chambers at respective opposite axial sides of said flange,

and pressure fluid supply means for supplying pressure fluid into each of said first and second chambers such that said pressure fluid serves to cushion axially and radially directed force transfers between said inner and outer bearing bodies,

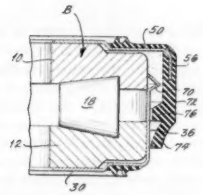
wherein means are provided for effecting a higher total axial fluid pressure force against said flange by the pressure fluid medium in said first chamber than by the pressure fluid medium in said second chamber.

3,844,631

UNITIZED THRUST BEARING AND INTERLOCKING SEAL ASSEMBLY THEREFOR

Dennis L. Otto, Malvern, and Armando J. Vito, North Canton, both of Ohio, assignors to The Timken Company, Canton, Ohio

Filed June 25, 1973, Ser. No. 373,010
Int. Cl. F16c *33/72*
U.S. Cl. 308—187.1 **12 Claims**



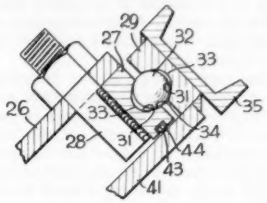
1. A bearing assembly comprising: a thrust bearing having spaced apart first and second races provided with opposed raceways, and rolling elements interposed between and engageable with the raceways to enable one of the bearing races to rotate freely with respect to the other bearing race; a circumferential wall mounted generally coaxially with respect to the axis of rotation for the bearing and having a portion which is offset in the radial direction; an annular seal element mounted generally coaxially with respect to the axis of rotation for the bearing and extending past the radial offset on the circumferential wall, the seal element having a shoulder thereon which extends inwardly past the radial offset on the circumferential wall so that the radial offset and the shoulder will interfere when the circumferential wall and seal element are pulled apart, the seal element further engaging the circumferential wall and establishing a seal therewith, the seal element and the circumferential wall cooperating to seal the spaces between the two bearing races and to exclude contaminants therefrom.

3,844,632

TILTING GRAIN BIN UNLOADER

William G. Ryczek, Kansas City, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 260,740, June 8, 1972, Pat. No. 3,771,676.
This application Apr. 9, 1973, Ser. No. 349,563
Int. Cl. F16c *33/64*
U.S. Cl. 308—191 **7 Claims**



1. A bearing for rotatably supporting a slowly moving intermittently driven member on a stationary member, the improvement comprising an inner race for said bearing formed from a hot rolled bar into a cylindrical member with a peripheral groove therein, commercial grade balls adapted to run in said groove with two point contact with each ball, an outer race positioned in surrounding relation to said balls, said outer race being formed of a hot rolled bar formed into a cylindrical member and being provided with a groove in the inner periphery thereof configured to provide two points of contact with each of said balls so that as said driven member moves said balls will become seated in said inner and outer races, an annular flange on one of said members perpendicular to the axis of said bearing and presenting a plurality of circumferentially spaced openings therethrough near the outer periphery thereof, a plurality of circumferentially spaced and axially extending bolts rigidly secured to one of said races and having threaded ends extending through said openings, nuts on said threaded ends and means rigidly securing the other of said members to the other of said races,

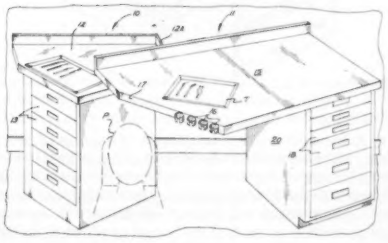
whereby upon removal of said nuts said other member and said bearing assembly may be separated axially from said one member.

3,844,633

DENTAL CABINETRY

Harold L. Frederick, 3234 N.E. Maryland Dr., Lincoln City, Oreg. 97367

Filed Feb. 16, 1973, Ser. No. 332,930
Int. Cl. A47b *95/18*; **A47f** *5/08*
U.S. Cl. 312—209 **1 Claim**



1. Dental cabinetry for use by a dentist and at least one assistant during the treating of a patient, said cabinetry posi-

tionable outwardly from a position against a room wall into an operative position, said cabinetry comprising,

a dentist's cabinet including a work surface and a series of drawers therebelow, said drawers disposed for opening and closing movement along vectors in angular relationship to an adjacent room wall, roller support means projecting upwardly from said work surface,

an assistant's cabinet including a pedestal housing a series of drawers, a work surface projecting outwardly from said pedestal in a horizontal plane spaced above the work surface of the dentist's cabinet and partially overlying the last mentioned work surface for support by said roller support means thereon, and

pivot means coupling the pedestal of the assistant's cabinet to a floor surface to permit outward swinging movement of the last mentioned cabinet through at least two different arcs to enable positioning of said last mentioned cabinet outwardly from a stored position against the room wall into the desired operative position adjacent a patient, said pivot means comprising channel members respectively affixed to the floor surface and to the underside of the cabinet, slide members carried within said channel members, means for locking said slide members to their respective channels, a threaded stud adjustably coupling said slide members and permitting rotational movement therebetween, said stud adjustable vertically to permit adjustment of the vertical spacing between said channel members to compensate for varying thicknesses of floor covering material.

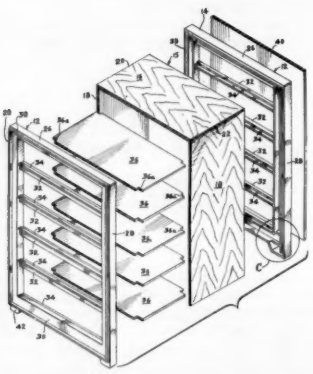
3,844,634
MULTI-COMPARTMENT STORAGE STRUCTURE

James Brompton Kruger, Oxford, and Joseph Cooper, Westport, both of Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Continuation-in-part of Ser. No. 212,035, Dec. 27, 1971, abandoned. This application Nov. 14, 1972, Ser. No. 306,426

Int. Cl. A47b *43/00*

U.S. Cl. 312—351 **4 Claims**



1. A low-cost multi-compartment storage structure comprising identical molded plastic front and rear frames exposed on the outside of the structure and an inverted U-shaped said and top wall panel of corrugated paper board, the front and rear edges of which are secured respectively to the top and sides of the frames, each of the frames comprising: an integral plastic open rectangle having in the inner face of its top and side elements a panel-receiving channel into which the edges of the U-shaped panel are received, a plurality of vertically spaced horizontal cross pieces extending across the opening and integral with the side elements, the cross pieces each having a downward step along its top adjacent its inward edge, the outward face of the frame formed with an outward rib extending on all elements of the rectangle and spaced outward from edges of the elements adjacent the inside of the rectangle; a plurality of identical substantially rectangular shelves of sheet material, each having opposite sides respectively resting in the downward step of horizontally-aligned cross pieces of the two frames; and a rear facing panel of sheet material secured against the outward face of one of the frames and having its margins extending respectively to just short of the ribs on the said frame.

3,844,635
RETRO-REFLECTORS

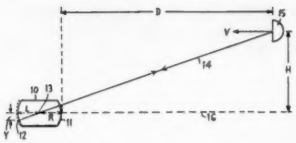
Francis James Atkins, Rugby, England, assignor to Associated Engineering Limited, Leamington Spa, Warwickshire, England

Filed Apr. 12, 1973, Ser. No. 350,624

Claims priority, application Great Britain, Apr. 14, 1972, 17472/72

Int. Cl. G02b *5/12*

U.S. Cl. 350—104 **10 Claims**



1. A retro-reflector including means to modify the reflected light repetitively when there is relative motion between a source of light shining on the retro-reflector and the retro-reflector, the relative motion being along a line which is inclined to a straight line between the source and the retro-reflector, said retro-reflector including means at least substantially to focus a substantially parallel beam of light from said source onto a surface of said retro-reflector and substantially at right angles to said surface, said surface having alternating bands of greater and lesser reflectivity and said bands progressively increasing in width in a direction from the optical axis of said retro-reflector towards the boundary of said surface, whereby during said relative motion said substantially focussed beam of light traverses said alternating bands which modify repetitively the light reflected from said surface.

3,844,636
ELECTROCHROMIC MIRROR

Donald Leonard Maricle, Londonderry, N.H., and Robert Domenico Giglia, Rye, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 13, 1972, Ser. No. 314,629

Int. Cl. G02f *1/36*

U.S. Cl. 350—160 **8 Claims**

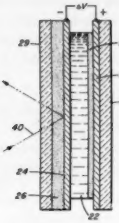
1. A radiation reflective device having an electric field responsive radiation transmitting characteristic comprising:

a. a persistent electrochromic material layer,

b. an ion porous electrically conductive radiation reflective layer in contact with said persistent electrochromic material,

c. a counter electrode,

d. an electrolyte in contact with said reflective layer and said counter electrode, and

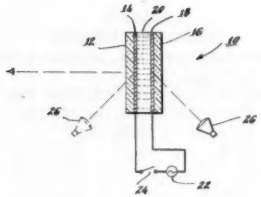


e. means to pass an electric current between said counter electrode and said electrochromic material.

3,844,637
INTEGRATED LIQUID CRYSTAL LUMINOPHOR DISPLAY

James V. Masi, Huntington, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 29, 1973, Ser. No. 392,458
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **5 Claims**



1. In a display device having a liquid crystal material positioned between two parallel plates, each plate having electrodes next to the liquid crystal material and an alternating current source connected across the electrodes for providing an electric field across the liquid crystal material, the improvement comprising

a. a luminophor mixed with a nematic type liquid crystal material in which molecules of the luminophor are attached and move in accordance with the movement of the molecules of the nematic liquid crystal material, and

b. a predetermined source of radiation applied to the mixture of luminophor and nematic liquid crystal material causing the luminophor to emit visible radiation of a characteristic color over a very wide angle in the presence of said electric field.

3,844,638
BEAM DOUBLER

Paul G. Lingenfelder, Sunnyvale, and Jerry D. Fox, San Jose, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

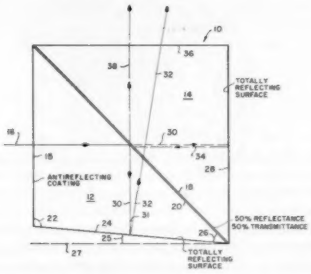
Filed Oct. 18, 1973, Ser. No. 407,677
Int. Cl. G02b *27/28*
U.S. Cl. 350—171 **8 Claims**

1. A beam-splitting device for splitting an incoming beam of light into two outgoing light beams comprising:

a front and a rear prism, each having their parallel-plane end faces in the form of a triangle,

the triangle of the end faces of the rear prism being a right triangle and the triangle of the front prism being roughly a right triangle except that one of the two sides thereof which would form the right angle is inclined,

said two prisms being fitted together along their hypotenuses so that the rear prism provides a rear and an upper side for the device and the front prism provies a front and a lower side, the lower side being the inclined side, one of the hypotenuses being coated with a partially reflecting-partially transmitting coating,

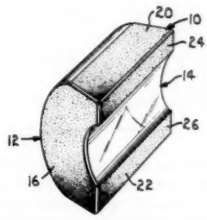


the incoming light beam entering the front side and striking the reflecting-transmitting coating, part of the beam being reflected downward to the inclined side and being reflected upward thru the upper side of the device, and part of the incoming beam being transmitted to the rear side, reflected back to the reflecting-transmitting coating and reflected up thru the upper side of the device, so that two separated light beams emerge from said upper side, the angle of divergence of said light beams being the same as the angle of inclination of said lower side.

3,844,639
CONVERTER LENS

Tom F. Smith, Urbana, Mo., assignor to United States T.R.A.D. Corporation, Springfield, Mo.

Filed Dec. 11, 1972, Ser. No. 313,836
Int. Cl. G03b *21/38*
U.S. Cl. 350—181 **1 Claim**



1. A converter lens for use with film having an anamorphically distorted image thereon, said lens comprising:

a first side having an outward curvature to define a convex surface;

a second side opposite said first side, the upper and lower portions of said second side forming flat surfaces, said second side having an inward curvature between said upper and lower portions to define a concave surface therebetween;

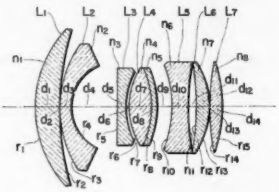
a pair of opposite ends interconnecting said first and second sides, said opposite ends defining flat surfaces angling outwardly from said first side to said second side; and

top and bottom surfaces interconnecting said first and second sides and said opposite ends.

3,844,640
LARGE-APERTURE WIDE-ANGLE PHOTOGRAPHIC LENS SYSTEM

Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-To, Japan

Filed Nov. 22, 1972, Ser. No. 308,786
Claims priority, application Japan, May 22, 1972, 47-50480
Int. Cl. G02b 9/64
U.S. Cl. 350—214 1 Claim



1. A large-aperture wide-angle photographic lens system consisting of a first lens, a second lens, a third lens, a fourth doublet lens, a fifth lens, a sixth lens and a seventh lens, said first lens being a positive meniscus lens with its convex surface positoned on the object side, said second lens being a negative meniscus lens with its convex surface on the object side, said third lens being negative, said fourth doublet lens being a cemented positive lens, said fifth lens being negative, said sixth lens being a positive meniscus lens with its convex surface on the image side and said seventh lens being positive, and said lens system having the following numerical data:

f=1.0, f_B=1.1338, aperture ratio 1:2, 2ω=64°

r_1 = 0.7781	d_1 = 0.1941		
	n_1 = 1.7234	ν_1 = 37.9	r_2 = 1.9389
r_3 = 1.0004	d_2 = 0.0639		
	n_2 = 1.5163	ν_2 = 64.0	
r_4 = 0.3198	d_3 = 0.3317		
r_5 = 81.3104	d_4 = 0.0833		
	n_3 = 1.8052	ν_3 = 25.4	
r_6 = 0.7185	d_5 = 0.0157		
r_7 = 0.7053	d_6 = 0.1441		
	n_4 = 1.8061	ν_4 = 40.8	
r_8 = −1.3701	d_7 = 0.0285		
	n_5 = 1.6990	ν_5 = 30.1	
r_9 = −1.9958	d_8 = 0.1347		
r_{10} = −0.8004	d_9 = 0.1247		
	n_6 = 1.7174	ν_6 = 29.5	
r_{11} = 4.5543	d_{10} = 0.0400		
r_{12} = −1.7400	d_{11} = 0.1110		
	n_7 = 1.7292	ν_7 = 54.6	
r_{13} = −0.5547	d_{12} = 0.0029		
r_{14} = 2.6372	d_{13} = 0.0833		
	n_8 = 1.6968	ν_8 = 55.6	
r_{15} = −1.6010			

where f represents the focal length of the lens system as a whole, f_B represents the back focal length, ω represents the half-field angle, r_1 through r_{15} represent radii of curvature of successive lenses, d_1 through d_{14} represent thicknesses of successive lenses and distances between lenses on the axis, n_1 through n_8 represent the refractive indexes of successive lenses and ν_1 through ν_8 represent Abbe's numbers of successive lenses.

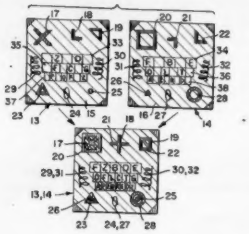
3,844,641
DEVICE FOR DIAGNOSING AND CORRECTING EYE FUSION

Chester J. Nowak, 8150 Milwaukee Ave., Niles, Ill. 60648

Filed Aug. 23, 1973, Ser. No. 390,731
Int. Cl. A61b 3/08
U.S. Cl. 351—33 12 Claims

1. Apparatus for diagnosing and correcting eye fusion, comprising

a. a set of two charts adapted to be supported in a side-by-side relation for viewing,
b. both of said charts having
1. background areas of one color and
2. indicia thereon of the same color but of different shade intensity from that of the said background areas,
c. at least some of the indicia on one chart being

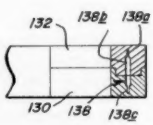


1. complementary in form, size, and shape to the indicia on the other chart, and
2. positioned on said charts so that when the charts are optically fused together by viewing through a variable prism of predetermined angularity by one having binocular vision, the indicia on one chart will fuse, in a complementary fashion, with the complementary indicia on the other chart and thereby produce complete indicia.

3,844,642
MICROFILM VIEWER

Arnis E. Peters, La Crosse, Wis., assignor to Gelatt Investments, Inc, La Crosse, Wis.

Division of Ser. No. 90,514, Nov. 18, 1970. This application Oct. 16, 1972, Ser. No. 297,690
Int. Cl. G03b 23/02
U.S. Cl. 352—78 R 5 Claims



1. In a cassette for a cassetted film strip of microphotographs that includes housing means for the film strip with transverse window means therein, a pair of spaced film spools in the housing means located on laterally opposite sides of the window means and adapted to be drivingly engaged by drive means exterior of the cassette, and film aligning means associated with each spool and mounted in the housing means between the spool and the window means and over which the film strip extending between the spools is trained; the improvement comprising, in combination: the housing means providing two film-spool housing sections spaced from each other and interconnected by an elongated bight, the transverse window means extending through the entire width of the bight, an elongated film-passageway means extending between and substantially tangentially of the two film aligning means and longitudinally through the bight and arranged perpendicularly to the transverse window means at the region of intersection of said film-passageway with the window means, said film-passageway being shaped to provide a central portion of greater width which intersects the window means and longitudinal film guideway portions of narrower width of the order of

the thickness of a film spaced on opposite sides of the transverse window means and arranged to receive and guide only opposite longitudinal edges of the film strip and arranged to hold the film strip portion that is being projected through the window means substantially in a precise plane without buckling or waving of the central portion of the film strip, the housing means being provided by a unitary dished body section that defines a bottom and an upright peripheral wall, and a top cover plate; each film spool being an axially elongated body that provides along its entire length an outer periphery adapted to have the film strip wound therearound, said body section and cover plate being shaped and arranged to provide when secured together two hollow film-spool housing sections with portions of said body section and cover plate positioned closely adjacent both axial ends of the film spools to serve to help confine the film on the spools, and the body section and cover plate each also defining interfitting and telescoping bight portions that when fitted together define the bight of the housing means, each telescoping bight portion being shaped to provide both part of the transverse window means and part of the film passageway means.

3,844,643

AUDIO-VISUAL CARTRIDGE AND PLAYER

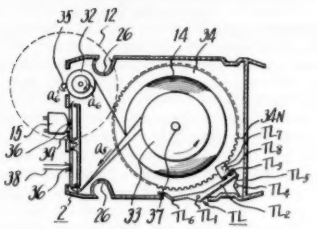
Teiji Aoki, 23-10, Daida-2, Setagaya-ku, Tokyo, Japan

Filed Mar. 16, 1973, Ser. No. 342,194

Claims priority, application Japan, Mar. 21, 1972, 47-27466; Apr. 15, 1972, 47-37974; May 20, 1972, 47-59299; June 6, 1972, 47-55671

Int. Cl. G03b *23/02*

U.S. Cl. 352—78 R **9 Claims**



1. A film cartridge for an autoslide and audio player comprising an endless film having a plurality of frames on each of which a picture is formed, each frame being formed of two conventional **8mm** film frames and the transverse longer side of the frame extends lengthwise of the film, an endless magnetic tape with audio signal and film feeding signals recorded thereon in synchronism with frames of said endless film, a housing having two portions separated by a partition wall for accommodating therein said endless film and said endless magnetic tape, respectively, a plurality of windows formed in said housing for exposing said endless film and magnetic tape therethrough, a reflector for projecting light passing through the endless film, first locking means for automatically locking said endless film and said magnetic tape so as to maintain synchronization therebetween when the cartridge is removed from the autoslide and player, said first locking means for the audio tape including a gear with teeth coupled to said magnetic tape, a lever mounted for engaging the gear to lock it when said cartridge is removed from said player and which extends through an opening of said cartridge and is moved by said player to disengage the lever from said gear when the cartridge is inserted into said player, and second locking means provided on the housing of the cartridge for locking the cartridge to the cartridge autoslide and player while said magnetic tape is being driven.

3,844,644

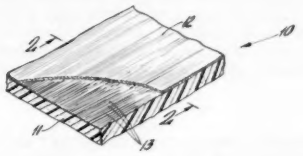
PROJECTION SCREEN

Eugene Martinez, Irvington-on-Hudson, N.Y., assignor to Robert H. Reibel, Croton-on-Hudson, N.Y., a part interest

Filed Sept. 19, 1973, Ser. No. 398,883

Int. Cl. G03b *21/56*

U.S. Cl. 350—117 **25 Claims**



1. A front surface photographic projection screen comprising a milky white translucent plastic film having a front surface to face the projection source, the rear surface of said film being formed with fine striations in a random pattern substantially covering said rear surface; and a reflective metallized deposited coating formed on said striated rear surface; the rear surface of said metallized coating forming the rear surface of said screen, said film allowing projected rays to pass through said film to be reflected back through the film by said coating and said film also carrying the image caused by said rays passing therethrough while said rays are projected onto said front surface.

3,844,645

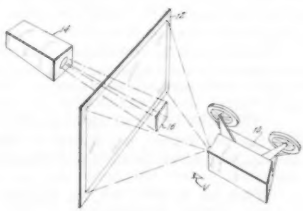
THREE-DIMENSIONAL PROJECTION SYSTEM

Harry D. Forster, Jr., Miami Shores, Fla., assignor to Holograph Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 8,836, Feb. 5, 1970, abandoned. This application July 7, 1972, Ser. No. 269,803

Int. Cl. G03b *21/00*

U.S. Cl. 353—10 **13 Claims**



1. A three-dimensional projection system comprising:

a screen;

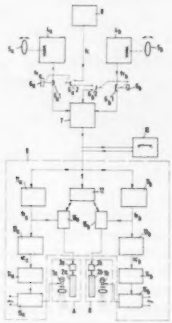
first image generating means for projecting a two-dimensional image onto the surface of said screen for reflection therefrom to be viewed by an observer; and

second image generating means for projecting an aerial image, said screen comprising means for passing the aerial image generated by said second means through said screen whereby the aerial image generated by said second means is directed toward said screen and suspended in space a spaced distance from the surface of said screen; the aerial image projected by said second image generating means cooperating with said image provided by said two-dimensional projecting means, however, to establish an overall three-dimensional display having depth and exhibiting relative intensities between said two-dimensional image and said aerial image in accordance with their respective illuminations.

3,844,646
PROJECTION APPARATUS

Claude Oury, Quai Orban 12, 4000 Liege, Belgium

Filed June 26, 1973, Ser. No. 373,855
Claims priority, application Belgium, June 28, 1972, 785520
Int. Cl. G03b 21/26
U.S. Cl. 353—86 7 Claims

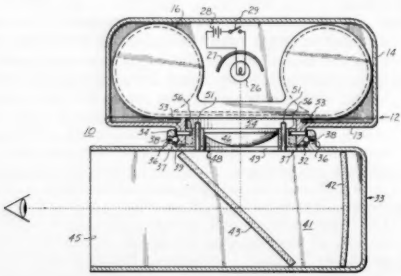


1. A device for projecting diapositives in cross fade, in combination with two projectors each comprising a projection lamp, a diapositives magazine, and automatic means for advancing the magazine and the diapositives, said device comprising a generator of first and second signals having first and second variable frequencies in distinct first and second ranges, and a decoding unit having an input connected to the output of the generator of said first and second signals and which provides further signals for controlling respectively the luminous intensity of the projector lamps and the advancement of the magazines of these projectors, said decoding unit comprising first and second parallel channels associated respectively with the first and second projectors and each comprising successively a selective amplifier, a converter of the frequency-voltage type, and a power stage, the power stage having an input to which there is applied the output voltage from said converter and an output connected to the associated projector lamp, said decoding unit also comprising means for interrupting the output from each of the selective amplifiers and means for detecting the interruption of each of the outputs from the selective amplifiers and for correlatively controlling the advancement means for the magazines of the two projectors.

3,844,647
PICTURE DISPLAY APPARATUS

Richard C. Gilsdorf, Duarte, and Stanley D. Tout, Arcadia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 8, 1973, Ser. No. 322,057
Int. Cl. G03b 3/02
U.S. Cl. 353—101 6 Claims



1. Apparatus for selectively displaying a first picture having a first format and a second picture having a second format, comprising in combination:

first means including lens means for projecting either of said first and second pictures and means for rendering said lens means translatorily movable along an axis in an optical path passing through said lens means;

second means for selectively positioning said first and second picture, respectively, in a first picture position and in a second picture position angularly displaced relative to said first picture position in said optical path;

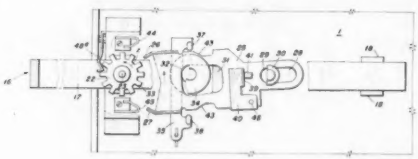
third means for rendering said second means rotatable about said axis; and

fourth means coupled to said lens means and to said second means for effecting translatory movement of said lens means in response to rotary movement of said second means, said fourth means including means for automatically positioning said lens means in a first lens means position for a display of said first picture with said first format in response to said positioning of said first picture in said first picture position and for automatically positioning said lens means in a second lens means poistion for a display of said second picture with said second format in response to said positioning of said second picture in said angularly displaced second picture position.

3,844,648
SLIDE TRAY INDEXING MECHANISM FOR SLIDE PROJECTORS OR THE LIKE

Englebert Denis, Dilbeek, and Leon De Bondt, Hingene-Wintam, both of Belgium, assignors to GAF Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,927
Claims priority, application Belgium, Oct. 28, 1970, 95684
Int. Cl. G03b 23/04
U.S. Cl. 353—116 12 Claims



1. In a slide projector of the type adapted to receive a slide tray having a plurality of slide receiving spaces, a base, and a slide carrier slidably disposed above the base for reciprocating movement transversely to the slide tray for transferring a slide from the slide tray to the viewing position on the optical axis of the projector and returning the same to the slide tray, a reversible slide tray indexing mechanism for advancing the slide tray to sequentially present each slide contained in the slide receiving spaces for viewing comprising, in combination, an indexing gear rotatably disposed on the projector and adapted to engage a corresponding rack of projections formed on the periphery of the slide tray; a two-pronged, fork-like unitary plate having a pawl at the end of each prong slidably and pivotally mounted on the base of the projector for reciprocating movement transversely to the direction of movement of the slide tray; means on the plate for operatively engaging the slide carrier upon reciprocating movement of said slide carrier to move the plate into engagement with the indexing gear to cause incremental rotational movement of said gear through an arcuate extent corresponding to the distance between two adjacent slide receiving spaces in the slide tray; a slidable forward and reverse control bracket transversely disposed with respect to and in operative engagement with said pawl plate and having tabs on opposite sides of the plate adapted to selectively contact and pivot said plate into a forward position in which one of said pawls engages the indexing gear for rotation in a direction such that the slide tray is

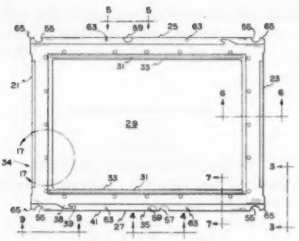
advanced to the next slide receiving space, or a reverse position in which the other of said pawls engages the indexing gear for rotation in the opposite direction to back up the slide tray to the previous slide receiving space; and a pair of guide brackets disposed adjacent the indexing gear and adapted to be engaged by either one of the pawls of said pawl plate to pivotally move said plate into a neutral position in which both pawls disengage the indexing gear at the end of each tray advancement stroke.

3,844,649

MICROFICHE CARRIER

Gerard O. Walter, Menlo Park, and Jack R. Morison, Millbrae, both of Calif., assignors to Varian Adco, Palo Alto, Calif.

Filed May 8, 1972, Ser. No. 251,176
Int. Cl. G03b *21/00, 21/64*
U.S. Cl. 353—120 **11 Claims**



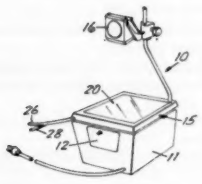
1. A microfiche carrier comprising a rectangular frame having two opposed side members and two opposed end members joined thereto, one of said end members being adapted to receive coded information, one of said side members including an edge comprising guide means precisely located with respect to said coded information for abutting the side of a bin receiving the carrier and cooperating with the bin to support the carrier therein and to position it relative to said carrier, said last mentioned means comprising a hook on said one side member having an inclined surface cooperating with a corresponding hook on said bin to provide the support and to urge said edge against the side of the bin whereby code reading apparatus located with respect to the side of the bin is accurately positioned to said coded information.

3,844,650

PROJECTOR

Geoffrey C. Nicholson, Woodbury, and John E. Collins, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 22, 1972, Ser. No. 255,616
Int. Cl. G03b *21/00, 23/00*
U.S. Cl. 353—122 **6 Claims**



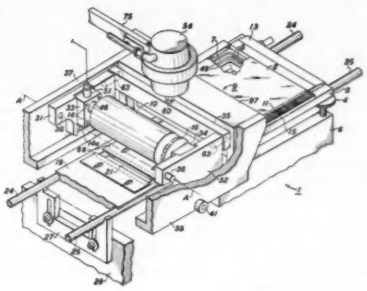
1. A projection system comprising, in combination, light source means for providing a light beam, condenser means for condensing said beam and directing the condensed beam toward a projection optic, projection optic means for focusing said beam on a viewing screen, beam modulating means between said condenser means and said projection head and comprising an electro-optical element having a continuous thin liquid crystal stratum between a transparent upper plate having an *x*-array of parallel conductive strips contacting one surface of said stratum and a lower plate having a *y*-array of parallel conductive strips contacting the other surface of said stratum, and voltage supply means including scanning means for permitting impression of greater than threshold voltage consecutively at each juncture of said *x*-array and *y*-array, modulating means for restricting impression of said voltage at specified junctures, and suppressing means for restricting the voltage differential to less than threshold voltage at all but said each junctures.

3,844,651

PHOTOELECTROPHORETIC IMAGING APPARATUS FOR CONTROLLING THE TIME INTERVAL OF SUCCESSIVE ROLLER ELECTRODES LEAVING AND ENTERING THE IMAGING REGION

Earl V. Jackson, Penfield; Wayne F. Schoppe, Webster; Gino F. Squassoni, Pittsford; Peter J. Warter, Penfield; Gerald A. Herr, Henrietta; David D. Hoesly, Webster; John M. Randall, Fairport; Russell G. Schroeder, II, Webster; Douglas E. Webb, Rochester; Clark W. Lange, and Robert J. Kelsch, both of Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 25, 1973, Ser. No. 373,536
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 P **8 Claims**



1. Photoelectrophoretic imaging apparatus comprising:
a. a transparent electrode adapted to support imaging suspension;
b. a carriage;
c. a mount on said carriage;
d. at least two roller electrodes rotatably mounted to said mount;
e. drive means for advancing said carriage, said mount and said roller electrodes, said roller electrodes into contact with said transparent electrode and imaging suspension that may be carried thereon, said drive means includes an electrical motor and means for changing the advancing velocity of said carriage, said mount and said roller electrodes after one of said roller electrodes has finished contacting said transparent electrode and before the other roller electrode commences contact with said transparent electrode, said means for changing the advancing velocity includes camming means located along the path of travel of said carriage for energizing a time delay relay, said time delay relay adjustable to predetermine the time interval between one of said roller electrodes leaving contact with said transparent electrode in an imaging region and before the other roller electrode enters the imaging region and commences contact with said transparent electrode;
f. means to apply an electric field between said roller electrodes and said transparent electrode; and

g. means to imagewise expose imaging suspension between said roller electrode and said transparent electrode to activating electromagnetic radiation through said transparent electrode.

3,844,652

TRANSFER PRINTING APPARATUS OF ELECTROPHOTOGRAPHIC APPARATUS

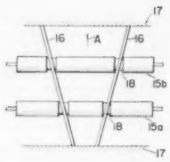
Ryuzo Suzuki, Tokyo; Seiichi Miyakawa, Nagareyama, and Masanori Watanabe, Tokyo, all of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Division of Ser. No. 273,425, July 20, 1972. This application Jan. 16, 1974, Ser. No. 433,713

Claims priority, application Japan, July 28, 1971, 46-57078; July 28, 1971, 46-57079

Int. Cl. G03g *15/16*

U.S. Cl. 355—3 **6 Claims**



1. In apparatus for transfer printing of electrophotographic images comprising a rotary drum provided with a photosensitive element on which an electrostatic latent image is to be formed, a transfer printing roller for urging a receptor sheet through the nip between said roller and said photosensitive element and against the surface thereof so as to transfer print said electrostatic latent image onto said receptor sheet, and a separating member for separating said receptor sheet from said photosensitive element after transfer printing, the improvement wherein said separating member comprises a pair of stationary elongated members which are inclined in opposite directions with respect to the direction of movement of said receptor sheet and extend through said nip when the apparatus is in use for moving the receptor sheet relative to the surfaces of said elongated members which face said transfer printing roller and for separating the receptor sheet away from said photosensitive element after the receptor sheet has passed through said nip.

3,844,653

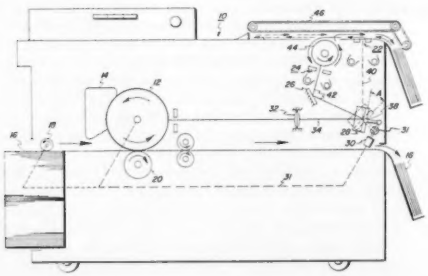
ROOF MIRROR COPYING SYSTEM

David L. Kelly, Pittsburgh, Pa., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1973, Ser. No. 410,654

Int. Cl. G03b *27/70*

U.S. Cl. 355—8 **7 Claims**



1. In optical reproducing apparatus providing duplex copying of an original document onto a single imaging surface, the improvement comprising:

an imaging surface;

a first exposure station for exposing a side of said original document;

an integrally pivotably mounted roof mirror comprising two flat mirror surfaces, said roof mirror being pivotable into a first position in which it is in optical alignment with said first exposure station to provide a first, roof mirror, reflective optical path utilizing both said two flat mirror surfaces,

said first reflective optical path extending through said roof mirror from said first exposure station to said imaging surface;

and means for pivoting said roof mirror out of said first position into a second position,

said roof mirror in said second position having only one of said two flat mirror surfaces in optical alignment with said first exposure station and providing through said one flat mirror surface a second, flat mirror, reflective optical path from said first exposure station to said imaging surface,

said second reflective optical path providing, relative to said first reflective optical path, relative reversion on said imaging surface of an image from said first exposure station.

3,844,654

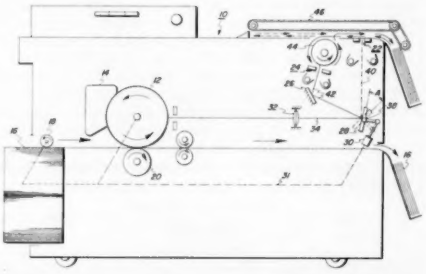
DUPLEX COPYING SYSTEM

Joachim Guenther, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 16, 1972, Ser. No. 307,279

Int. Cl. G03b *27/32*

U.S. Cl. 355—24 **14 Claims**



1. In optical reproducing apparatus providing duplex copying of an original document onto a single duplicating imaging surface, the improvement comprising:

an imaging surface;

a first exposure station for exposing a side of said original document;

a second exposure station for said document spaced from said first exposure station;

document reversal means for exposing in said second exposure station the opposite side of said document from said first esposure station;

a first and fixed mirror optically aligned with said second exposure station;

a second and pivotably mounted mirror spaced from said first mirror;

and means for pivoting said second mirror between a first position and a second position,

said second mirror in said first position being optically aligned with said first exposure station and providing a first reflective optical path through said second mirror from said first exposure station to said imaging surface,

said second mirror in said second position being optically aligned with said first mirror and providing through said first and second mirrors together a second reflective optical path from said second exposure station to said imaging surface,

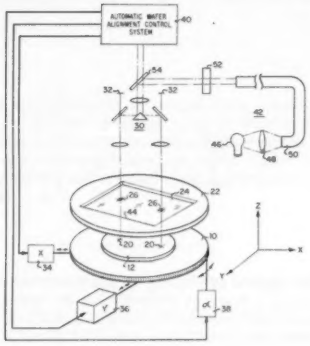
said second reflective optical path providing reversion on said imaging surface of said document exposed at said second exposure station relative to the exposure of said document at said first exposure station.

3,844,655

METHOD AND MEANS FOR FORMING AN ALIGNED MASK THAT DOES NOT INCLUDE ALIGNMENT MARKS EMPLOYED IN ALIGNING THE MASK

Karl-Heinz Johannsmeier, Mountain View, Calif., assignor to Kasper Instruments, Inc., Mountain View, Calif.

Filed July 27, 1973, Ser. No. 383,043
Int. Cl. G03b *27/70*
U.S. Cl. 355—43 **11 Claims**



1. A method for employing a photomask to form a corresponding mask of a selected material upon a workpiece, said method comprising the steps of:

depositing a photosensitive film of the selected material upon the workpiece;

aligning one or more alignment marks upon the workpiece with one or more corresponding alignment marks upon the photomask to align the workpiece with the photomask;

directing exposure light onto portions of the photosensitive film masked by the one or more alignment marks of the photomask to fully expose those portions of the photosensitive film and thereby prevent the one or more alignment marks of the photomask from becoming part of the mask of the selected material;

directing exposure light through the photomask onto the entire unmasked surface of the photosensitve film to selectively expose the remaining portions of the photosensitive film in accordance with the photomask; and

removing either the unexposed or the exposed portions of the photosensitive film from the workpiece to define the mask of the selected material upon the workpiece.

3,844,656

PHOTO-COMPOSING MACHINE

Tatsunosuke Masuda, 41-4, Shimogama Kitashiba-cho, Sakyo-ky, Kyoto, Japan

Filed Dec. 4, 1972, Ser. No. 311,632
Int. Cl. G03b *27/42*
U.S. Cl. 355—53 **1 Claim**

1. In a photo-composing machine comprising:

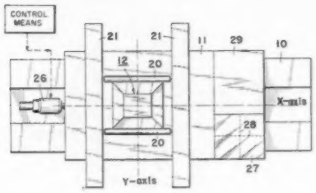
a. a platen for receiving a photo sensitized member;

b. a carriage for receiving a least one negative or positive of a subject, to be duplicated;

c. means for moving said carriage relative to said platen, in response to control signals to predetermined positions on said photo sensitized member for multiple exposures of said member;

d. a means for automatically registering and loading at least said negative or positive onto said carriage comprising;

1. a light table as a substantial extension of said platen; said light table having cross lines thereon;



2. a register point provided by said cross lines for at least said negative or positive on said light table for providing a point of origin for movement of said carriage; and

3. a vacuum means in said carriage for picking up at least said negative or positive from said table;

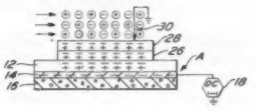
whereby, said carriage can be positioned above said table and said point of origin in response to said control signal, pick up said negative or positive and then transmit said negative or positive to predetermined positions over said platen for multiple exposures of said member.

3,844,657

CONTACT PRINTING APPARATUS AND METHOD

Harold A. Schweriner, Hatboro, Pa., assignor to The Simco Company, Inc., Lansdale, Pa.

Filed Mar. 20, 1973, Ser. No. 342,965
Int. Cl. G03b *27/02*
U.S. Cl. 355—132 **7 Claims**



1. Contact printing apparatus comprising:

a surface defining a zone for contact printing,

means for securing a photosensitive sheet upon said surface and a negative in face-to-face abutment with said photosensitive sheet in contact with said surface,

means for directing an ionized filtered stream of air in laminar flow disposition over said contact printing zone, a light source interposed above said contact printing zone, and,

an enclosure at least partially overlying the contact printing zone, said enclosure including a hood of thin, flexible transparent material interposed between the light source and the sheets to be exposed, said hood operating to shield the contact printing zone from falling dust and at the same time vibrating on the laminar flow air stream to nullify the effects of shadows produced by dust particles falling on the hood.

3,844,658
RANGE FINDER

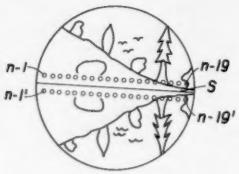
Helmut Gela, Maria Enzersdorf; Walter Besenmatter, Vienna; Robert Scheiber, Vienna; Fritz Schneider, Vienna, and Gerhard Rothy, Vienna, all of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Germany

Filed June 16, 1972, Ser. No. 263,426

Claims priority, application Austria, June 23, 1971, 5472/71; Oct. 7, 1971, 8687/71; Jan. 14, 1972, 303/72

Int. Cl. G01c *3/08*

U.S. Cl. 356—4 **30 Claims**



1. In a rangefinder system, in combination:

at least one adjustable objective for forming a first image of an object in a first image plane;

means for adjusting said objective to focus the image in said plane;

optical means for forming a second image of said object in a second image plane, with focused objective said first and second images being identical, whereas with defocused objective said images being different;

photoelectric receiver means scanned along predetermined paths within said first and second image planes, with focused objective said paths include identical image points, said photoelectric receiver means supplying an electric output depending on the brightness of the individual image points of said images:

operating means to scan said photoelectric receiver means along said predetermined paths;

means for comparing the output signals derived from the first image with the output signals derived from the second image;

evaluation means connected to the comparison means to be controlled by the latter.

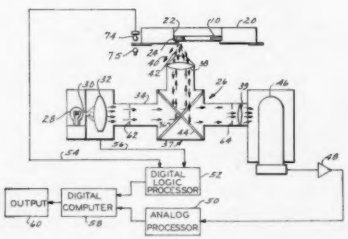
3,844,659
STRAIN GAUGE DATA REDUCTION APPARATUS AND METHODS

Frederick Baganoff, Florissant, Mo., assignor to Baganoff Associates, Inc., St. Louis County, Mo.

Filed Dec. 11, 1970, Ser. No. 97,114

Int. Cl. G01b *11/16, 11/00;* **G01n** *21/48*

U.S. Cl. 356—32 **12 Claims**



1. Apparatus for analyzing strain information inscribed in the surface of a flat, circular strain gauge comprising means for carrying said strain gauge, means for projecting a beam of light on the inscribed surface of said gauge, means for moving said carrying means and projecting means for establishing relative rotational and radial movement between said strain gauge and said beam of light to scan said gauge both angularly and radially, means for detecting light reflected from the surface of said gauge for providing an electrical signal responsive to said reflected light, said reflections varying in accordance with the strain information inscribed on the surface of said gauge, and means for processing said signal to provide data representative of the scratch information inscribed on the surface of said gauge.

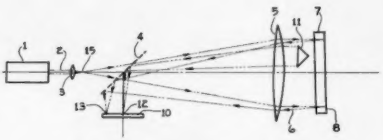
3,844,660
METHOD AND APPARATUS FOR ALIGNING AN INTERFEROMETER MIRROR

George C. Hunter, Middletown, Conn., assignor to Zygo Corporation, Middletown, Conn.

Filed Nov. 16, 1972, Ser. No. 307,162

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 **4 Claims**



1. The method of aligning an interferometer comprising a light source, a first lens which focuses the light and a second lens which collimates the light into a beam which falls onto an adjustable partially reflecting mirror which can be adjusted to be orthogonal to said beam, and a beam splitter between the two lenses in the optical path formed by said light source, said lenses and said mirror, which beam splitter directs light reflected from said mirror onto a viewing screen out of said optical path, in which said mirror must be adjusted exactly orthogonal to the collimated beam to align the interferometer, which method comprises interrupting a portion of said beam between said second lens and said mirror and retroreflecting the interrupted portion of the beam exactly parallel to its incidence, thereby providing a spot of light on said viewing screen at the exact position where the reflected light from said mirror would focus if said mirror were exactly orthogonal to said beam, and adjusting the angle of said mirror so that the spot of light reflected from said mirror onto said screen coincides with the spot from the reflected interrupted beam.

3,844,661
SELF-CLEANING OPTICAL CELL FOR A FLUID ANALYSIS SYSTEM

Christopher B. Birkett, Encinitas, and Barry D. Epstein, San Diego, both of Calif., assignors to General Atomic Company, San Diego, Calif.

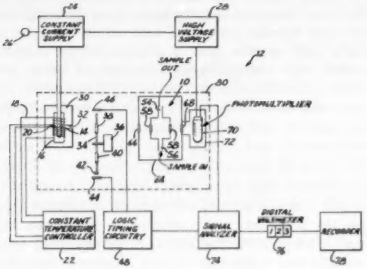
Filed Feb. 14, 1973, Ser. No. 332,306

Int. Cl. G01n *1/10, 21/26*

U.S. Cl. 356—184 **10 Claims**

1. In a system for analyzing a sample of fluid and the like, which system includes source means for emitting a light beam having a spectrum of wavelengths, optical cell means adapted to receive a fluid sample therein and having aligned and spaced optical windows, said optical cell being positioned to allow passage of wavelengths from said source means through said windows, photosensor means positioned to receive wavelengths which pass through said optical cell, and at least two filter elements selectively movable to a position to effect transmission of selected wavelengths from said source means

to said photosensor means, the improved combination therewith of wiper means including a wiper element supported within said optical cell and adapted for movement to simultaneously wipe the inner surfaces of said spaced optical windows to remove contaminants therefrom, and actuating means for



moving said wiper element in synchronized relation with movement of said filter elements so as to wipe said inner surfaces of said optical windows in predetermined relation to passage of said wavelengths through said windows without impeding passage of said selected wavelengths to said photosensor means.

3,844,662

SEDIMENTATION INSTRUMENT FOR BODY FLUIDS AND METHOD OF MICROSCOPIC EXAMINATION OF THE SEDIMENT

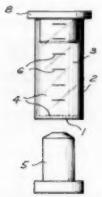
Andre von Froreich, Gefionstrasse 14, 2000 Hamburg 50, Germany

Continuation of Ser. No. 271,007, July 12, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,082

Claims priority, application Germany, July 13, 1971, 2134884

Int. Cl. G01n 1/10, 21/24

U.S. Cl. 356—246 **8 Claims**



1. A tubular receptacle for examining the sediment of body fluids, said receptacle being closed at one end by a thin optically planar transparent bottom of uniform thickness throughout thereby permitting microscopic examination of the body fluid in said receptacle from its lower side, said bottom of said receptacle being provided with a grating which permits the particles settling to the bottom in a predetermined area defined by said grating to be counted whereby the sediments in the entire body fluid sample can be calculated.

3,844,663

PIVOTAL CONNECTION WITHOUT CLEARANCE, ESPECIALLY FOR MEASURING INSTRUMENTS

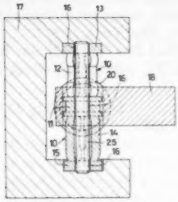
Mario Prette, Segrate, Italy, assignor to Semel S.p.A., Milan, Italy

Filed Feb. 16, 1973, Ser. No. 333,375

Claims priority, application Italy, Feb. 19, 1972, 20782/72

Int. Cl. F16c 11/12

U.S. Cl. 403—157 **5 Claims**



1. A pivotal connection for effecting limited swinging between a first member and a second member, said connection comprising

a. a central core adapted to be rigidly connected to said first member,

b. two side cores, one on each side of said central core, said side cores both being adapted to be rigidly connected to said second member, and said central core and said two side cores having bores which are axially aligned along a pivotal axis;

c. at least two elastic tongues connecting each of said side cores to said central core, said tongues twisting in response to radial rotational movement between said central core and said side cores about said pivot axis, and

d. means for preventing relative axial movement between said side cores and for limiting the radial movement of said tongues during twisting thereof, said means including a stiffening pin passing through the bores of said central and side cores, said pin being spaced from said tongues and from said central core during normal operation of said connection but abutting said tongues to limit the inward radial movement thereof when said tongues are twisted more than a given amount.

3,844,664

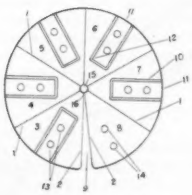
ICOSAHEDRON DISC

John P. Hogan, 704 Elm, Williamsburg, Iowa 52361

Filed Aug. 10, 1973, Ser. No. 387,449

Int. Cl. E04b 7/08

U.S. Cl. 403—171 **10 Claims**



1. A structural joint consisting of a plane disc composed of five identical rigid sectors that generate 60 degrees each, wherein each sector has a means for the attachment of strut material; one additional rigid sector that generates slightly less than 60 degrees, leaving a wedge-shaped gap of considerably

less than 60 degrees, which when combined with the adjoining rigid sector that generates slightly less than 60 degrees, generates 60 degrees; furthermore the rigid sector that generates slightly less than 60 degrees is used as an overlapping plate with the adjacent 60 degree sector it is separated from by the wedge-shaped gap.

3,844,665

TENSILE ROPE JOINT AND METHOD OF MAKING SAME

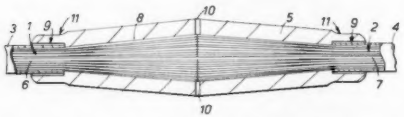
Colin F. G. Smith, and Malcolm L. Hayward, both of Hampshire, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,219

Claims priority, application Great Britain, Feb. 29, 1972, 9237/72

Int. Cl. H02g *15/08*

U.S. Cl. 403—267 **1 Claim**



1. A joint between a pair of metallic tensile rope members comprising:

an elongated one-piece ferrule with an internal bore having a maximum diameter within the central portion of the ferrule, said ferrule tapering toward both ends thereof;

each rope member having the strands at an end portion thereof splayed out;

said end portions being mounted within opposite ends of said ferrule and abutting each other adjacent said central portion;

a hardened filler material impregnating said splayed strands to lock the strands in said ferrule; and

at least one filler injection bore extending through the wall of said ferrule near the central portion thereof and means providing vent passages adjacent to the opposite ends of said ferrule.

3,844,666

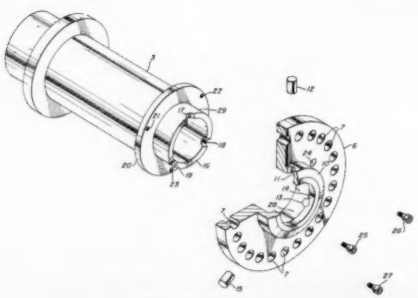
APPARATUS FOR SECURING A WHEEL ONTO A SHAFT OR THE LIKE

Robert L. Coope, Phoenix, Ariz., assignor: Stevens Engineering, Incorporated, Phoenix, Ariz.

Filed Sept. 8, 1970, Ser. No. 70,109

Int. Cl. F16d *1/06*

U.S. Cl. 403—355 **2 Claims**



1. An assembly comprising:

a. a spindle having its outer surface threaded along at least a portion of its length, said spindle having an end provided with a plurality of radially extending depressions of equal arcuate cross-section, adjacent ones of said depressions being equally angularly spaced from one another, the axes of said depressions falling into a single plane to which the axis of said spindle is perpendicular;

b. a wheel, said wheel having a concentric axial bore of an inner diameter slightly larger than the outer diameter of said spindle such that said wheel may be slipped onto said spindle with a predetermined maximum of radial play therebetween, said wheel being provided with a plurality of dowel pins extending radially inwardly into said bore, said plurality of dowel pins corresponding in number and angular disposition to said plurality of depressions and having equal radii at least as large as the radii of curvature of said plurality of depressions, the axes of said dowel pins falling into a single plane to which the axis of said wheel is perpendicular; and

c. a nut plate having a concentric axial bore threaded and dimensioned for threaded engagement with said spindle and a plurality of bolt receiving, threaded axial bores disposed radially outwardly from and equally circumferentially spaced about said concentric axial bore through said nut plate; such that said dowel pins seat into said depressions to prevent relative circumferential movement between said spindle and said wheel;

d. said wheel being provided with a plurality of apertures disposed for axial alignment with said bolt receiving threaded bores in said nut plate when said nut plate is threaded onto and said wheel is slipped onto said spindle; and

e. a plurality of bolts extending through said apertures and threaded into said bolt receiving bores.

3,844,667

TRAFFIC SIGNALS

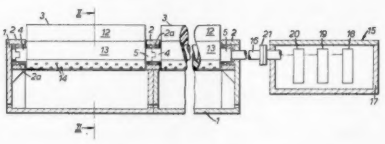
Rosslyn Fitton-Kearns, Gloucester, England, assignor to Makearm Holdings Limited, Gloucester, England

Filed Mar. 20, 1973, Ser. No. 343,145

Claims priority, application Great Britain, Mar. 20, 1972, 12959/72

Int. Cl. G08g *1/00*

U.S. Cl. 404—16 **14 Claims**

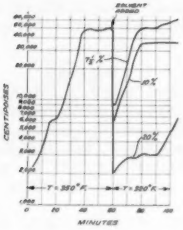


1. A traffic signalling device adapted to be inset into a road surface and including an elongated signal member having a flattened side, means for mounting the signal member for rotation about its longitudinal axis, and selectively operable means for rotating the signal member between an inoperative position in which said flattened side is generally level with the road surface and an operative position in which it projects from the road surface so as to impart a noticeable shock to the wheels of a vehicle passing over the device whereby to give the vehicle driver a positive indication of the existance of the signal, said selectively operable means serving to maintain the signal member in the position into which it has been rotated.

3,844,668
PAVEMENT COMPOSITION

Robert E. Winters, 1533 Fishburn Ave., Los Angeles, Calif. 90063, and Charles H. McDonald, 3130 W. Pierce St., Phoenix, Ariz. 85009

Continuation of Ser. No. 217,516, Jan. 13, 1972, abandoned. This application July 20, 1973, Ser. No. 381,272
Int. Cl. E01c 7/35
U.S. Cl. 404—72 8 Claims



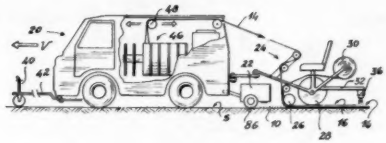
1. A method of repairing pavement subject to fatigue cracking which comprises the steps of preparing an elastomeric material comprised of a reaction product of paving asphalt and non-oil resistant, asphalt-soluble rubber, and an asphalt solvent, said asphalt having a penetration grade of about 10—10 to about 200–300, said rubber being an unvulcanized, vulcanized or reclaimed rubber selected from the following group: isoprene rubber, natural rubber, butadiene rubber, butadiene-styrene rubber, butyl rubber and ethylene propylene rubber; the method comprising heating the asphalt to a first temperature between about 300° and about 500°F. to yield hot liquid asphalt having a viscosity of less than 200 centpoises; reacting between about 2 and about 4 parts, by weight, of the hot asphalt with one part of the rubber, granulated to a mesh size between —No. 4 and +No. 50, to form a jellied-asphalt-rubber composition having a viscosity of from about 2000 to about 200,000 centipoises; allowing the jellied-asphalt-rubber composition to cool to a second temperature of from about 200° to about 400°F.; mixing the cooled jellied-asphalt-rubber composition with between about 5 percent and about 20 percent by volume of the composition of an asphalt solvent selected from the group consisting of kerosene, aliphatic and aromatic hydrocarbons, solvent naphtha, ligroin, paint thinner, diesel oil, light oil fractions from coal tar, white gasoline, petroleum spirits, paraffinic oils, and halogenated hydrocarbons, said solvent having a boiling point above said second temperature but not less than about 175°F. to form the elastomeric material having a viscosity of from about 1000 to about 10,000 centipoises, said material adapted to set up and increase its viscosity to a value equal to the jellied-asphalt-rubber composition after a predetermined period of time at said second temperature with less than about a 5 percent loss of the solvent; and applying a predetermined amount of the material to the surface to be treated and allowing it to set up.

3,844,669
LINE-MARKING DEVICE FOR ROAD SURFACE

Ludwig Eigenmann, Canton Ticino, Vacallo, Switzerland

Filed July 26, 1972, Ser. No. 275,427
Claims priority, application Italy, July 30, 1971, 26983/71; Oct. 23, 1971, 30250/71
Int. Cl. E01c 19/12
U.S. Cl. 404—94 9 Claims

1. An arrangement for applying traffic-regulating indicia to road surfaces, comprising a vehicle adapted to be driven over a road surface and including a plurality of support means for supporting a plurality of strips of marker material to be applied over the road surface so as to form at least one traffic-regulating indicium, said vehicle further including guide means for guiding each of said strips for application thereof to the road surface, and said support means and said guide means having a first relative position in which said guide means co-operates with one of said support means for guiding one of said strips, and a second relative position in which said guide means co-operates with another of said support means for guiding another of said strips, said support means and said

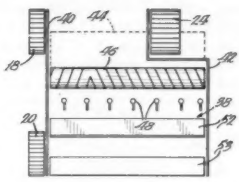


guide means being relatively movable between said first and second relative positions so as to guide first said one of said strips from said first support means and thereafter said another of said strips from said other support means; and an applicator unit operatively associated with said guide means and being effective for applying said strips subsequently to the road surface.

3,844,670
METHOD AND APPARATUS FOR RESTORING CONCRETE ROAD SURFACES

Glen E. Perkins, 1800 7th St., East Moline, Ill. 61201

Filed July 7, 1972, Ser. No. 269,591
Int. Cl. E01c 19/00
U.S. Cl. 404—104 3 Claims



1. Apparatus for applying new concrete to an existing concrete road surface having two finished lanes of travel and a finished shoulder contiguous with each of said lanes on substantially the same level therewith, paving means for continuously applying a concrete surface over the entire width of one of said lanes and the contiguous shoulder upon movement of said paving means in a forward direction, rigid frame means for supporting said paving means above said one lane and shoulder, and ground support means for providing mobile ground support for said frame at one side from the other of said lanes closely adjacent the inner edge thereof and at the other side from said one paved shoulder adjacent the outer edge thereof and spaced forwardly of said paving means, the remainder of said frame being devoid of ground support and being counterbalanced from said ground support means.

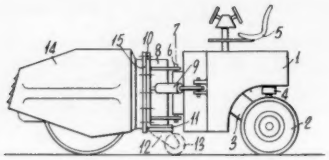
3,844,671
CENTRALLY ARTICULATED COMPOUND ROAD CONSTRUCTION YARD MACHINE WITH ORIENTABLE AUXILIARY ELEMENT

Domenico Domenighetti, via Nosetto 6, Bellinzona, Switzerland

Continuation of Ser. No. 131,297, April 15, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,923
Int. Cl. E01c 19/38
U.S. Cl. 404—117 2 Claims

1. A compound road construction machine comprising a tractor unit, a work unit, an auxiliary orientable member

connected for rotation relative to said tractor unit about a vertical axis, means for swinging said auxiliary member about said vertical axis, said auxiliary member having a vertical first flange surface on the side thereof opposite said tractor unit, said work unit having a vertical second flange surface thereon detachably interconnected to said first flange surface whereby said work unit is detachably secured to said tractor unit for



rotation relative to said tractor unit about said vertical axis, said auxiliary member having a horizontal third flange surface disposed at the lower end of said first flange surface and extending toward said tractor unit from the lower edge of said first flange surface, an element having a horizontal fourth flange surface detachably secured to said third flange surface beneath said third flange surface, and wheels carried by and disposed beneath said element.

3,844,672

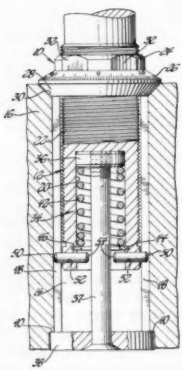
EXTERNALLY ADJUSTABLE TOOL CARTRIDGE ASSEMBLY

Robert Fitzsimmons, 4451 Fenwick Dr., Warren, Mich. 48092

Filed Oct. 10, 1972, Ser. No. 296,472

Int. Cl. B23b *29/14*

U.S. Cl. 408—155 **17 Claims**



1. An externally adjustable tool cartridge assembly of the type which is adapted to be received within the locating hole of a tool housing comprising: tool cartridge means for mounting a cutting tool within the locating hole of a tool housing, said tool cartridge means including a bore extending partially therethrough; adjustment means for adjusting the cutting position of said tool cartridge means; and retaining means for retaining said tool cartridge means within the tool housing; said retaining means including an elongated shank portion, one end of which is disposed within said bore and movable relative thereto, the other end of said shank portion being adapted for anchoring engagement with the tool housing and resilient means disposed within said bore and acting between said tool cartridge means and said shank portion for facilitating the adjusting movement of said tool cartridge means independent of the position of said retaining means.

3,844,673

PROCESS FOR THE REGULATION OF THE FLOW IN CONDUITS

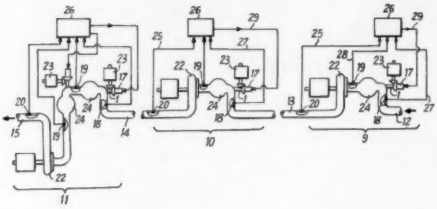
Pierre P. Hayward, 6 Rue des Ecoles, 92 Saint-Cloud, France

Continuation-in-part of Ser. No. 127,506, March 24, 1971, Pat. No. 3,773,429. This application Oct. 17, 1973, Ser. No. 407,056

Claims priority, application France, Mar. 24, 1970, 70.10585

Int. Cl. F01d *17/00, 17/08*

U.S. Cl. 415—1 **11 Claims**



1. A process for regulating fluid flow in a pipeline that includes at least two sections, each having a characteristic maximum internal pressure to which it may be subjected without experiencing an unacceptable probability of mechanical failure and each being headed by a pumping station having at least one variable pitch bladed rotary pump for increasing pressure on the fluid forwarded thereto in the pipeline, comprising:

continuously detecting which one section is being subjected to an internal pressure nearest its said characteristic maximum;

maintaining the pitch of the blades of the respective pump of the station of said one section to tend to sustain said nearest internal pressure; and

pivoting the blades of the respective pump at the station of at least one other section to accommodate the rate of flow through said one section.

3,844,674

VORTEX BLOWER

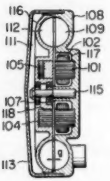
Kazuyoshi Moriyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 8, 1973, Ser. No. 387,511

Claims priority, application Japan, Sept. 6, 1972, 47-88716

Int. Cl. F04d *5/00;* **F04b** 17/00, 35/00

U.S. Cl. 415—53 T **10 Claims**



1. A vortex blower comprising: a casing, an air passage means formed in the periphery of said casing, inlet and outlet means provided at opposite ends of said passage means, a shaft secured to said casing at the central portion thereof, an impeller having an annular groove provided in the periphery thereof, said annular groove being divided into a plurality of compartments by a plurality of spaced radially extending blades, said impeller being disposed on said shaft with said

annular groove being opposed to said air passage means, said impeller being spaced from said casing to form a constant predetermined gap between said annular groove and said air passage means, and means for driving said impeller including a stator means disposed in said casing, a rotor securedly mounted within said impeller, one of said stator means and said rotor means being provided with a means for generating a magnetic force, said rotor means being opposed to and spaced from said stator means to form a gap for accommodating magnetic force transfer between said stator means and said rotor means, said last-mentioned gap and said gap between said annular groove and said air passage means being disposed in a plane transverse to the axis of said shaft.

3,844,675

PLURAL SHELL AXIAL TURBINE FOR OPERATION WITH HIGH PRESSURE, HIGH TEMPERATURE STEAM

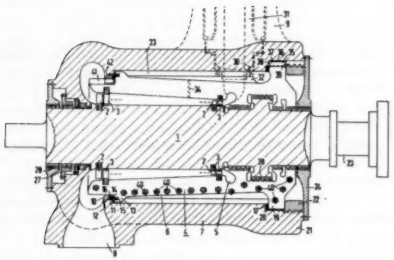
Axel Remberg, Mulheim-Ruhr, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim-Ruhr, Germany

Filed Apr. 13, 1973, Ser. No. 350,706

Claims priority, application Germany, Apr. 17, 1972, 2218500

Int. Cl. F01d *25/26*; **F04d** *29/52*

U.S. Cl. 415—108 **5 Claims**



1. Axial turbine for operation with high pressure, high temperature steam, comprising a pot-shaped housing having inlet and outlet means for the steam, the location of the steam inlet means in the axial direction of the housing being adjacent one side of the housing and the steam outlet means in the axial direction of the housing being adjacent the other side of the housing, a shaft, the shaft being mounted in the housing coaxially therewith for rotation therein, a packing housing for the shaft, said packing housing being mounted around the coaxially therewith in the pot-shaped housing adjacent the inlet side of the pot-shaped housing, and means for carrying guide vanes, said guide vane carrying means being integral with the packing housing and extending toward the other end of the pot-shaped housing, the guide vane carrying means and the packing housing forming an inner shell within the pot-shaped housing, said inner shell being integral in the axial direction of the housing and divided in a plane of the housing axis, a radially inwardly extending shoulder formed in the pot-shaped housing adjacent the steam outlet side thereof, said shoulder abutting and radially supporting the inner shell but permitting axial movement of the inner shell, radially outwardly extending projections formed adjacent the steam inlet side of the pot-shaped housing on the shaft packing housing portion of the inner shell, axial slots formed in the pot-shaped housing adjacent the projections, radially inwardly extending shoulders formed in the pot-shaped housing adjacent the slots, the projections being received in the slots and abutting against the shoulders, whereby the projections, shoulders and slots fix the inner shell adjacent the steam inlet side of the pot-shaped housing both radially and axially.

3,844,676

TURBO SUPERCHARGERS FOR INTERNAL COMBUSTION ENGINES

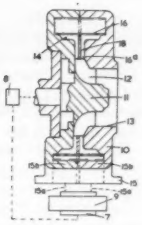
John Francis Betteridge, Wembley, England, assignor to C.A.V. Limited, Brimingham, England

Filed Apr. 13, 1973, Ser. No. 351,026

Claims priority, application Great Britain, Apr. 13, 1972, 17016/72

Int. Cl. F01b *25/02*

U.S. Cl. 415—156 **3 Claims**



1. A turbo supercharger for an internal combustion engine and of the kind comprising a radial inward flow turbine having a casing defining a pair of engine exhaust gas inlets disposed in side by side relationship, the casing also including a volute passage having a throat and an elongated aperture through which gases entering the inlets flow onto the periphery of the turbine rotor, the supercharger also including a compressor which is driven by the turbine and which supplies air under pressure to the associated engine, and a flexible band disposed in said passage, said band extending from the end of the passage remote from said inlets towards the inlets, operating means coupled to the end of the band at said inlets whereby the band can be moved to reduce the cross sectional area of the passage throughout its length, arcuate division members mounted in end to end relationship on the band and which when the band is set to provide the minimum cross sectional area of passage co-operate with each other to divide said passage into two parts, each part of said passage being connected to to divide of said inlets and the division members acting todivide said aperture so that the streams of exhaust gas flowing into said inlets are maintained separated until the exhaust gas has impinged on the turbine rotor, the members when the band is moved to increase the cross sectional area of the passage separating to define spaces which place the two parts of the passage in communication with each other.

3,844,677

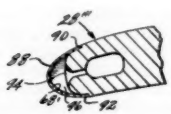
BLUNTED LEADING EDGE FAN BLADE FOR NOISE REDUCTION

Robert C. Evans, and Donald K. Dunbar, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 194,285, Nov. 1, 1971, abandoned. This application July 5, 1973, Ser. No. 376,546

Int. Cl. F01d *5/16*

U.S. Cl. 416—84 **2 Claims**



1. In a gas turbine engine of the type which includes rotating turbomachinery, a combustion section, and an exhaust nozzle adapted to provide a propulsive force, the improvement comprising:

a turbomachinery rotor blade having a leading edge at least a portion of which includes blunting means for reducing the noise generated by rotation of said blade;

wherein said blunting means comprise an inflatable boot which surrounds at least a portion of said leading edge and means for supplying sufficient pressure behind said boot for slightly inflating same; and wherein

said boot is expandable, upon inflation, substantially axially of the blade to vary the aerodynamic shape of the blade without varying its camber.

3,844,678

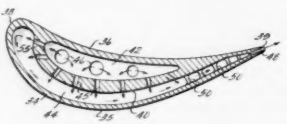
COOLED HIGH STRENGTH TURBINE BUCKET

Albert P. Sterman, Cincinnati, Ohio; Robert B. Solda, Peabody, Mass., and Thomas A. Auxier, Irvine, Ky., assignors to General Electric Company, Lynn, Mass.

Continuation of Ser. No. 684,071, Nov. 17, 1967. This application Apr. 26, 1972, Ser. No. 247,511

Int. Cl. F01d *5/08*

U.S. Cl. 416—97 **10 Claims**



1. In an axial flow turbine, a high strength turbine bucket comprising:

a base portion for securing the bucket to a turbine rotor,

a closed airfoil portion integrally formed with said base portion and projecting radially therefrom,

said airfoil portion including convex and concave side walls interconnecting spaced upstream leading and downstream trailing edges,

a partition integrally formed with said convex and concave side walls for dividing the interior of the airfoil portion into first and second radially extending heat transfer regions,

said first region being adjacent the mid-chord section only of one of said side walls and said second region being adjacent said leading and trailing edges and the entire chord section of the other of said side walls,

inlet means in said base portion for admitting working fluid to said first region,

a plurality of throttling openings in said partition for accelerating cooling fluid and for directing the high velocity cooling fluid from said first region to said second region, the high velocity cooling fluid impinging on selected surfaces within said second region such that high local coefficients of convection heat transfer are generated therein,

outlet means for discharging cooling air from said second region, and said first region is adjacent said concave side wall and said second region is adjacent said convex side wall, whereby said second region is located adjacent the most temperature critical portions of the turbine bucket.

3,844,679

PRESSURIZED SERPENTINE COOLING CHANNEL CONSTRUCTION FOR OPEN-CIRCUIT LIQUID COOLED TURBINE BUCKETS

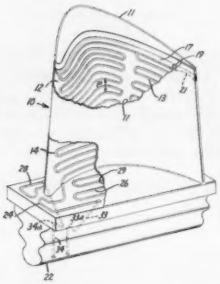
Clayton M. Grondahl, Elnora, and John Moore, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,539

Int. Cl. F01d *5/18*

U.S. Cl. 416—97 **10 Claims**

1. In a vane structure adapted for mounting in a rotating element of a machine wherein the airfoil surfaces of the vane are subjected to contact with hot gas, the vane comprising an airfoil-shaped core and a conforming skin affixed thereto, said core and said skin defining at least one open-ended subsurface passage therebetween for the transit of coolant therethrough, said at least one passage being adapted to receive coolant flow at the radially inner end thereof from a source of coolant and to discharge the coolant flow from the radially outer end thereof into a chordwise-extending manifold, said manifold in turn being adapted to discharge coolant flow from said vane, the improvement in which:



a. said at least one passage has a substantially constant depth along the length thereof and is disposed in a convoluted configuration with most of each successive convolution extending in the generally chordwise direction and

b. means for self-establishment of a liquid seal with the coolant flow, said means being located in and stationary relative to the root of said vane and being in series flow communication between said source of coolant and said at least one passage, the reverse flow of coolant vapor from said at least one passage being prevented thereby.

3,844,680

ADJUSTABLE-PITCH AXIAL FAN

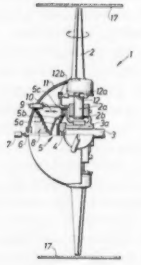
Edgar Saterdal, Rottne, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Mar. 27, 1972, Ser. No. 238,559

Claims priority, application Sweden, Mar. 30, 1971, 4133/71

Int. Cl. F04d *29/36*

U.S. Cl. 416—157 **1 Claim**



1. An apparatus for effecting axial flow comprising a generally cylindrical casing, said casing being selected with a diameter corresponding to the desired size of fan, a rotary fan mounted coaxially in said casing having a rotary hub adapted to be mounted on the end of a drive shaft and a plurality of

radial fan blades, means to change the pitch of said blades during operation including a dog member mounted outboard of said shaft end rotatable with said hub and displaceable axially relative thereto, and means connecting each of said fan blades to said dog member to determine a pitch position responsive to axial displacement of said dog member, each of said radial fan blades having at its inner end a housing cover and support ring providing a central opening for an inwardly-opening socket forming a bearing housing, the improvement wherein each blade is rotatably supported in said hub by a radially-extending blade axle fixed at its inner end to the hub and terminating at its outer end in an enlarged end portion within said bearing housing, the axle projecting through the central opening of said socket, said axle being selected of a length to space said bearing housing radially outward from said hub with clearance therebetween, said connecting means being disposed in said clearance space and connected to blades adjacent said inwardly-open socket, said blade being rotatably mounted on said axle by a single axial ball bearing having a pair of annular race rings surrounding said axle and having one race ring bearing against said enlarged end portion and fitted within said bearing housing, and having the other race ring bearing against said housing cover and support ring whereby said axial ball bearing receives the centrifugal force of said blade as the fan is rotated within said casing, and a spring washer compressed between said enlarged end portion of said axle and the bottom of said bearing housing, said washer having a cross section corresponding to the cross section of said housing to urge said blade outwardly against the single axial ball bearing when said fan is at rest, the size of said fan being determined by the diameter of said casing and the length of said blade axles.

3,844,681

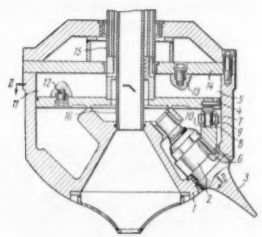
RUNNER OF HYDRAULIC MACHINE HAVING ROTATABLE BLADES

Alexandr Pavlovich Kolesnikov, ulitsa Butlerova, 28, kv. 52; Gleb Stepanovich Schegolev, ulitsa Sinyavinskaya, 12, kv. 29; Semen Abramovich Granovsky, P.S. Bolshoi prospekt, 77, kv. 3; Ljudmila Ivanovna Stankevich, Lesnoi prospekt, 34/36, kv. 162, all of Leningrad, U.S.S.R.; Ljusien Grigorievich Smolyarov, deceased, late of Leningrad, U.S.S.R., and by Elena Gavrilovna Sheshuko, administratrix, prospekt Metallistov, 80, korpus 2, kv. 64, Leningrad, U.S.S.R.

Filed Feb. 13, 1973, Ser. No. 332,143

Int. Cl. F01d *7/00*

U.S. Cl. 416—157 **2 Claims**



1. A runner of a hydraulic machine having rotatable blades, comprising a runner housing; journals for said rotatable blades; a cross-piece accommodated in said housing above the journals for the rotatable blades; levers disposed in said housing; said levers being fixed to the journals of said rotatable blades and pivotally connected to said cross-piece; a servomotor for rotating said blades, said servomotor being provided with a winged piston having rotatable and fixed wings, and means fixing said rotatable wings rigidly to said cross-piece.

3,844,682

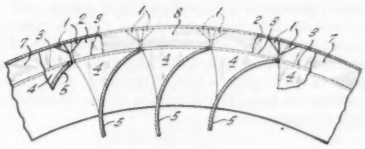
CENTRIFUGAL FAN WHEEL BLADES AND METHODS FOR SPINNING CENTRIFUGAL FAN WHEELS INCORPORATING SAID BLADES

John Henry Morris, Baltimore, Md., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Feb. 16, 1973, Ser. No. 333,416

Int. Cl. B23p *15/02*

U.S. Cl. 416—178 **1 Claim**



1. In a centrifugal blower wheel having a plurality of separate blades, each of said blades having a flange at the end thereof extending radially of said wheel, said blades being arranged around the periphery of said wheel and a continuous retaining rim secured in position over said flanges and indented in interlocking relation over said flange portion of said blades for holding the blades in operative position with said flanges spaced from each other to form said wheel, the improvement which comprises having protruding generally radial tabs at the flanges of the blades which lock into the rim when said rim is spun around the blade flanges, the protruding tabs being located at the corner of each flange and facing toward the axial center of the centrifugal blower wheel so that the flanges lock into the rim when said rim is spun around the blade flanges.

3,844,683

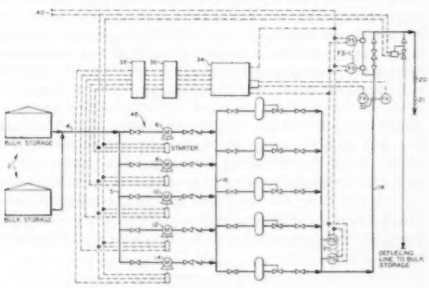
APPARATUS AND METHOD FOR CONTROLLED LIQUID TRANSFER

Don E. Albert, Bartlesville, Okla., assignor to Phillips Petroleum, Bartlesville, Okla.

Filed Sept. 28, 1972, Ser. No. 292,901

Int. Cl. F04b *41/06*

U.S. Cl. 417—6 **8 Claims**



1. A method for delivering a liquid from a liquid supply source to a plurality of outlets while automatically maintaining the liquid flow rate from each outlet within a preselected range during discharge of liquid from at least one of the outlets and during variations of the total rate of liquid being discharged from the outlets, comprising:

measuring the flow rate of the liquid passing to the outlets and delivering a first signal representative of and in response to said measured flow rate;

comparing said first signal to a plurality of preset actuation points and delivering an actuation signal in response to said comparison;

automatically actuating the next operable pump of a preselected pump sequence in response to said actuation signal being representative of the first signal being of a magnitude greater than the flow rate magnitude of the next actuation point, said actuation signal being transferred along the sequence of pumps to said next operable pump in response to the next pump in the sequence being other than operable;

automatically terminating operation of a particular pump and actuating a next operable pump of the preselected pump sequence in response to the operation of a safety switch associated with said particular pump; and

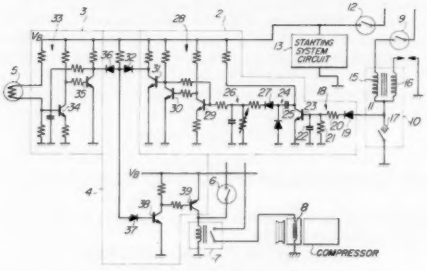
automatically terminating operation of each pump in response to said first signal being representative of a flow rate less than the flow rate magnitude of the actuation point of the respective operating pump, the order of said termination being in the reverse of the sequence of the pump actuation.

3,844,684

PRELIMINARY COMPRESSOR LUBRICATING DEVICE

Seiichi Kawamura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed July 31, 1973, Ser. No. 384,298
Claims priority, application Japan, Aug. 7, 1972, 47-78336
Int. Cl. F04b *49/00*
U.S. Cl. 417—13 **2 Claims**



1. A device for effecting preliminary lubrication of a compressor of an air conditioner for a motor vehicle adapted to be connected and disconnected to an engine of the motor vehicle through an electromagnetic clutch and provided with means for supplying lubricant to sliding parts of the compressor, comprising an engine speed discriminating circuit connected to an ignition circuit for the engine, a sensor for sensing the open air temperature, an open air temperature responsive circuit adapted to respond to the prevailing open air temperature, and an AND circuit connected to output terminals of the engine speed discriminating circuit and the temperature responsive circuit and producing a signal to a compressor starting relay to close the relay and engage the electromagnetic clutch when the engine speed is a cranking speed or idling speed and the open air temperature is above a predetermined level.

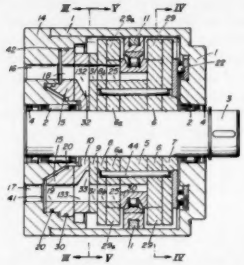
3,844,685

VANE MACHINE WITH PRESSURE BIAS AND BALANCING MEANS FOR THE ROTARY CONTROL PORT MEMBER

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation of Ser. No. 162,034, July 13, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 396,115
Claims priority, application Austria, July 15, 1970, 6467/70
Int. Cl. F04b *23/10*; F01c *21/00, 19/08*
U.S. Cl. 417—204 **18 Claims**

1. Vane machine comprising housing means having an axis, and a non-rotatable control surface perpendicular to said axis and formed with at least one pair of part-circular stationary control ports, said housing means having inlet and outlet means communicating with said stationary control ports; a reaction ring mounted in said housing means eccentric to said axis; rotor means mounted in said housing for rotation about said axis and having circumferentially spaced slot chambers and vanes in said slot chambers cooperating with said reaction ring and forming between each other contracting and expanding working chambers for high pressure and low pressure fluid, said rotor means having at one end a rotary control face confronting said non-rotatable control surface and having rotary control ports communicating with said working chambers and passing said stationary control ports alternately



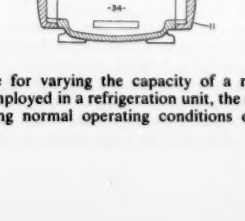
whereby high pressure is exerted between portions of said non-rotatable control surface and said rotary control face and also in those regions between said stationary control ports where the flow of fluid into said working chambers is reversed; said non-rotatable control surface having a balancing groove in at least one of said regions, confronting said rotary control face and being closed by the same, said balancing groove extending in circumferential direction substantially the angular distance between two of said vanes, said stationary control surface communicating with connecting conduit means for connecting said balancing grooves with a high pressure zone of the machine so that said rotary control face is maintained in a frictionless balanced position.

3,844,686

CAPACITY CONTROL DEVICE FOR RECIPROCATING COMPRESSOR

Jack J. Le Blanc, Clay, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 4, 1973, Ser. No. 366,924
Int. Cl. F04b *49/00*
U.S. Cl. 417—298 **1 Claim**



1. A device for varying the capacity of a reciprocating compressor employed in a refrigeration unit, the device being operable during normal operating conditions of said unit, comprising:

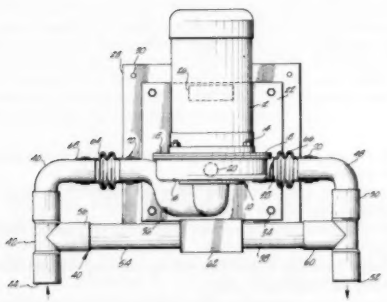
a. a suction valve for regulating the passage of refrigerant gas into a cylinder of said compressor;
b. a solenoid disposed within the outer walls of the compressor;
c. means to sense operating conditions within the refrigeration unit, and being further operable to selectively place said solenoid in first and second operating positions; and
d. means operably connected to said solenoid and said suction valve to place said suction valve in an unloaded state when said solenoid is placed in its first operating position in response to predetermined conditions within said refrigeration unit, said means being further operable to place said suction valve in a loaded state when said solenoid is placed in its second operating position, said means comprising a cable member connected at one end to said solenoid and at its other end to a spring member, said cable being positioned about the periphery of said cylinder; and fork members pivotally connected to said cable member, movement of said solenoid causing said fork members to rotate to selectively load or unload said suction valve.

3,844,687

FLEXIBLE MOUNTING SYSTEM

James Piper, 1159 Fountain Way, Anaheim, Calif. 92630

Filed Apr. 4, 1973, Ser. No. 347,897
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—301 **14 Claims**



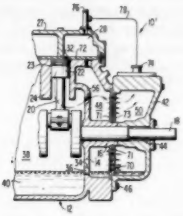
1. A flexible system for mounting a pump in a continuously circulating, potable hot water system for a building comprising an inlet conduit;
an outlet conduit, said outlet conduit terminating at a point which is a fixed distance from the end of said inlet conduit;
a rigid link between said inlet and said outlet conduits to prevent relative movement therebetween;
means for flexibly coupling said inlet and outlet conduits to the pump, said coupling means having a low modulus of elasticity such that no efficient sound transmitting path is provided between the pump and said inlet and outlet conduits; and
a flexible support means for mounting the pump to the building, said flexible support means being of greater rigidity than said flexible coupling means to insure that said coupling means will not exceed their elastic limit.

3,844,688

COMPRESSOR CRANK CASE VENTING ARRANGEMENT FOR ELIMINATING LUBE OIL CARRYOVER

Clifford T. Bulkley, Glastonbury, and David N. Shaw, East Granby, both of Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed May 8, 1973, Ser. No. 358,443
Int. Cl. F15b *21/04;* **F04b** *21/06*
U.S. Cl. 417—313 **3 Claims**



1. In a reciprocating gas compressor comprising:
a compressor housing including a crank case for housing the compressor crank shaft and having at least one piston supported by said crank shaft and reciprocating within a fixed cylinder and defining with said cylinder a working chamber,
a vertical housing end wall defining a crank case vent passage separate from and to the side of said crank case,
an intake manifold overlying said compressor housing and being ported to said working chamber,
a coalescent separator vertically mounted within said crank case vent passage and spaced from said end wall to separate said crank case vent passage into a first chamber underlying said intake manifold and a second chamber,
a first vertical opening within said first chamber leading directly from said crank case vent passage first chamber into said intake manifold, and
a second opening within said housing second chamber for normally introducing the gas to be compressed to said second chamber for passage through said coalescent separator to remove oil carried thereby,
a first opening within the bottom of said end wall and carrying a check valve to permit oil flow from said first chamber into said crank case, and
a second opening within said end wall above said check valve opening for permitting oil-air mist within said crank case to vent from said crank case into said crank case vent passage first chamber, the improvement comprising:
means for blocking said first opening within said first chamber,
means for directing the intake gas to said compressor directly to said intake manifold, bypassing said first and second chambers, and
means for fluid coupling said second housing opening directly to said intake manifold,
whereby; the oil-air mist within the crank case entering said first chamber from said crank case, passes through said coalescent separator to remove the oil therefrom to permit venting of the crank case gas resulting from blow-by to the intake manifold, and returns the removed oil back to the crank case through said check valve to eliminate compressor lube oil carryover.

3,844,689

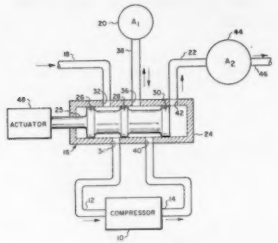
TIME-SHARING COMPRESSION SYSTEM

Roger C. Weatherston, Williamsville, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,284
Int. Cl. F04b *21/00, 39/00*
U.S. Cl. 417—572 **20 Claims**

1. In a time-sharing compression system, the combination comprising:

a. a compressor having an inlet and an outlet, and a source of low pressure fluid
b. accumulator means including at least one pressure reservoir for storing gas at at least one intermediate pressure, above that of said low pressure fluid and
c. first valving means for cyclically placing said reservoir



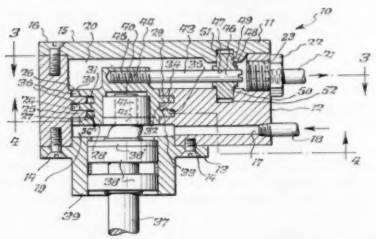
first in communication only with said compressor outlet and then in communication only with said compressor inlet whereby said compressor first delivers gas at one or more intermediate pressures above said low pressure fluid and then delivers gas to a discharge passage at a final higher pressure.

3,844,690

HELICAL PUMP

John F. Kopczynski, 1671 Sweeney, North Tonawanda, N.Y. 14120

Filed May 16, 1973, Ser. No. 360,790
Int. Cl. F04c *1/06*
U.S. Cl. 418—48 **2 Claims**



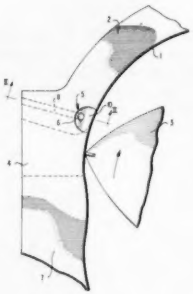
1. A pump comprising a housing, an inlet chamber in said housing, an outlet chamber in said housing, a pumping chamber positioned between said inlet chamber and said outlet chamber, said pumping chamber having a wall with a first helical thread thereon with said first helical thread having a first inner diameter and a first outer diameter, a rotor having a second helical thread thereon, said second helical thread having a second inner diameter and a second outer diameter, said second outer diameter being larger than said first inner diameter but smaller than said first outer diameter so as to provide fluid receiving spaces between said wall and said rotor, said first and second helical threads having side walls for providing sealing engagement with each other, means for revolving said rotor in a circular path relative to said pumping chamber so as to produce sequential contact between circumferential portions of said rotor and said pumping chamber, said means for revolving said rotor comprising means for mounting said rotor eccentrically in said pumping chamber, means for holding said rotor against rotation about its axis during said revolving thereof, said means for mounting said rotor eccentrically comprising a shaft having first and second portions with said second portion being offset from said first portion and with the axis of said second portion extending substantially parallel to the axis of said first portion, first bearing means for mounting said first portion of said shaft on said housing, second bearing means for mounting said rotor on said second portion of said shaft, said means for holding said rotor against rotation comprising an arm having first and second ends, first connecting means connecting said first end to said rotor, and second connecting means connecting said second end to said housing, said link and said first and second connecting means including a slidable connection and a pivotable connection.

3,844,691

LUBRICANT SUPPLY SYSTEM FOR ROTARY PISTON ENGINE

Helmut Dobler, Esslingen/Neckar, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 26, 1971, Ser. No. 175,212
Claims priority, application Germany, Aug. 27, 1970, 2042536
Int. Cl. F01c *21/04*; **F04c** *15/00, 29/02*
U.S. Cl. 418—97 **9 Claims**



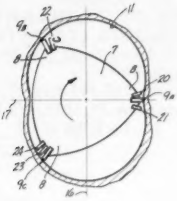
1. A rotary piston internal combustion engine comprising:
lateral housing parts,
at least one casing housing disposed adjacent respective ones of said lateral housing parts,
a multi-arched running surface formed on said casing housing,
a piston rotating within the casing housing which slides along said running surface,
and lubricating means for lubricating said running surface, wherein said lubricating means includes a first rectilinear oil channel means in said casing housing which extends in the axial direction of said engine substantially parallel to said running surface, said first oil channel means terminating at at least one end thereof in an oil discharge opening between an end flank of the casing housing and a respective adjacent housing part,
wherein said first oil channel means terminates at both ends thereof in respective oil discharge openings between respective oppositely facing end flanks of the casing housing and respective adjacent housing parts,
wherein said casing housing has an area of smaller width than its normal width in the axial direction of the engine within the area of the ends of said first oil channel means such that said oil discharge openings are formed between said respective adjacent housing parts and said area of smaller width, and
wherein said area of smaller width is substantially semicircular shaped as viewed in the axial direction of the engine.

3,844,692

PROTECTIVE SHIELDS FOR ROTARY INTERNAL COMBUSTION ENGINE ROTOR TIP SEALS

Charles D. McLain, Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed May 16, 1973, Ser. No. 360,746
Int. Cl. F01c 19/02; F04c 15/00, 27/00
U.S. Cl. 418—113 20 Claims



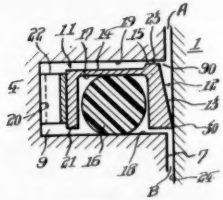
1. An improved sealing system for use in rotary internal combustion engines of the type having a hollow epitrochoidal shaped chamber defined by a wall and a rotor having a plurality of apex portions, each apex portion having a tip, the rotor being rotatably and eccentrically mounted for motion within the chamber so that a space exists between the tip and the chamber wall, comprising: strip-like sealing means located at each rotor tip with said sealing means being movably mounted and projecting from the rotor tip so as to fill the space between the rotor tip and the chamber wall, and a rotor tip seal shield located adjacent to, parallel to, and spaced from in advance of each of the rotor tip sealing means, with said shield being rigidly fixed to the rotor, with the height of the shield above the rotor face being equal to from 60 to 90 percent of the distance between the rotor face at the point where the shield is mounted, and the chamber wall, whereby said shield protects the rotor tip sealing means from thermal and mechanical shock during the operation of the engine.

3,844,693

OIL SEAL DEVICE FOR ROTARY PISTON ENGINE

Ko Chiba; Masayuki Maruyama; Daisaku Kobayashi, and Yoshikuni Mizuma, all of Kashiwazaki, Japan, assignors to Riken Piston Ring Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,181
Int. Cl. F01c 19/08
U.S. Cl. 418—142 1 Claim



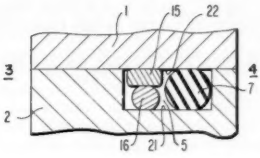
1. In a rotary combustion engine in which the rotor is formed in each of the opposite side surfaces thereof with two concentric annular grooves to fittingly receive respective oil seal devices, an oil seal device fitted in the outer annular groove and comprising: annular wave spring means (22) arranged in the bottom of said outer annular groove (9), a metallic sealing ring (12) of generally U-shaped cross section opening radially inside and fitted in said outer annular groove in pressure engagement with the adjacent housing wall surface under the bias of said annular wave spring means, an O-ring of elastic material (16) received in the U cavity of said sealing ring, said sealing ring having a generally thin-walled web portion (14) thereby to exhibit as a whole a substantial axial resiliency, and an annular, radially outwardly projecting ridge (15) formed on the web portion of said sealing ring at a location in the open mouth (90) of said annular groove (9).

3,844,694

ROTARY PISTON INTERNAL COMBUSTION ENGINE, ESPECIALLY OF TROCHOIDAL CONSTRUCTION

Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Oct. 6, 1972, Ser. No. 295,692
Claims priority, application Germany, Oct. 7, 1971, 2150007
Int. Cl. F01c 19/00
U.S. Cl. 418—149 14 Claims



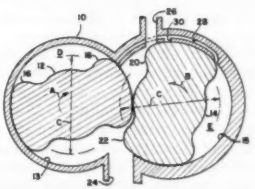
1. A rotary piston internal combustion engine which includes lateral housing means and at least one casing housing means having abutment surfaces, and sealing means arranged between the abutment surfaces of the housing means to be connected with one another, said sealing means being disposed in an annular groove and surrounding channels for cooling and lubricating media, characterized in that a first sealing means serving the purpose of liquid-seal is enclosed by a second sealing means providing a gas seal.

3,844,695

ROTARY COMPRESSOR

Roger C. Weatherston, Williamsville, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Continuation of Ser. Nos. 297,576, Oct. 13, 1972, abandoned, and Ser. No. 76,519, Sept. 29, 1970, abandoned. This application Feb. 12, 1974, Ser. No. 441,929
Int. Cl. F01c 21/00, 1/24; F04c 1/08
U.S. Cl. 418—180 22 Claims



1. A rotary expansible chamber apparatus, comprising:
A. a casing defining first and second working chambers,

B. a first gas passage communicating with each of said working chambers,

C. a second gas passage communicating directly with only said second working chamber,

D. a first impeller rotatably mounted in said first working chamber and having two lobes with the space therebetween defining two wells,

E. a second impeller rotatably mounted in said second working chamber and having two lobes in mating engagement within the wells of said first impeller, each lobe having a leading edge and a trailing edge,

F. said second gas passage and said first and second impellers being so constructed and arranged that the gas occupying the space between said first impeller and said first working chamber is blocked from any prior communication with said second gas passage until the trailing edge of said second impeller exposes said space to said second passage at which time said space has undergone a reduction in volume with a resultant increase in pressure between that existing in said first and second gas passage,

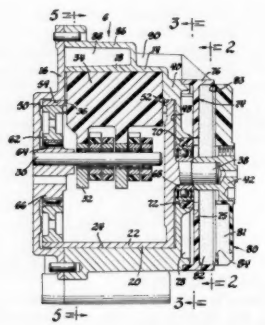
G. additional passage means for placing a closed well of said first impeller in communication with a closed well of said second impeller as said second passage is closed whereby the pressure of gas in said wells in increased by continued rotation of said impellers.

3,844,696

FLUID PUMP NOISE REDUCTION MEANS

John L. Stiles, Saginaw, and Herbert E. Ziehl, Bridgeport, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1973, Ser. No. 390,307
Int. Cl. F04c *29/06*
U.S. Cl. 418—181 **2 Claims**



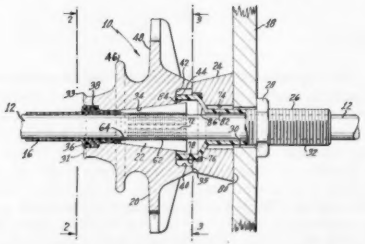
1. A positive displacement air pump for use in a system for supplying air to the stream of hot exhaust gases emitted from a combustion engine; said pump including a generally cylindrical housing, a working chamber inside said housing having an inlet and an outlet; an impeller in said working chamber for directing an air stream through said working chamber from said inlet to said outlet and increasing the pressure in said air stream and a shroud fixed to one axial end of said housing, said shroud having a portion thereof spaced from said housing to form a shroud volume and having a hole therethrough; said housing including a passage extending circumferentially around said working chamber adjacent the other axial end of said housing, said circumferential passage having one end open to said inlet and another end diametrically opposite said inlet; said housing also including a passage extending axially outside said working chamber, said axial passage communicating said other end of said circumferential passage with said shroud volume; said shroud opening, shroud volume, axial passage, circumferential passage and inlet forming an extended inductive inlet passage for said working chamber; said housing further including an accumulator volume in communication with said working chamber and said extended inductive inlet passage; said extended inductive inlet passage and said accumulator volume combining to reduce the noise emitted by said pump.

3,844,697

TENDON ANCHORAGE ASSEMBLY WITH THREADED SUPPORT MEMBER FOR CONCRETE FORMWORK

Hugh J. W. Edwards, Cabco House, 296-304 Ewell Rd., Surbiton, Cobham, England

Continuation of Ser. No. 755,577, Aug. 27, 1968, abandoned.
This application July 19, 1971, Ser. No. 164,073
Int. Cl. B28b *21/60*
U.S. Cl. 425—111 **40 Claims**



1. In an anchorage assembly including an anchor having a hollow, continuous and leak proof housing and a stressing tendon passing therethrough, said anchor including flange means attached to and extending generally laterally outwardly of said housing, said flange means fixing said anchor in concrete after setting thereof whereby said anchor is inhibited from movement in a direction inwardly of the concrete, gripping means within said hollow of said housing for engaging the portion of said tendon in said housing, the improvement comprising first means for supporting said housing on a formwork and for forming a cavity in the concrete, said first means including a member extending generally longitudinally of the tendon for supportingly connecting between said housing and a formwork, fixing means for attaching said member to said housing, said first means further including a spacer surrounding said member and disposed in sealing engagement with said housing and adapted to be sealed against the formwork to prevent ingress of concrete therebetween and for forming a cavity in concrete therebetween, said member fixing the relative position of said housing to the formwork and for urging said housing toward said spacer and sealing said spacer to said housing and adapted to be sealed against the formwork and adapted to extend through said cavity formed by removal of said spacer.

3,844,698

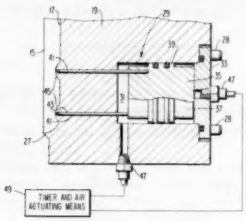
MEANS FOR FORMING A HOLE IN THE ARTICLE DURING BLOW MOLDING

Joseph Zanca, 1662-62nd St., Brooklyn, N.Y. 11204

Filed Aug. 2, 1972, Ser. No. 277,194
Int. Cl. B29d *23/03*
U.S. Cl. 425—155 **9 Claims**

1. In a mold for blow-molding a hollow plastic article comprising mold walls having located therein a cavity portion of

the dimensions of the desired article, said cavity portion being defined by cavity walls which terminate at one point in an orifice in said mold walls through which a plastic parison may be inserted, the improvement comprising reciprocating punch means communicating through said mold walls with said cavity portion to an extend sufficient to form at least one hole in



the wall of the hollow plastic article during the blow molding operation, and means for reciprocating said punch means, said means for reciprocating said punch means including timing means for retracting said punch means from said hole forming communication at a time when the parison is still malleable such that a smooth, substantially nonfrayed hole is formed.

3,844,699

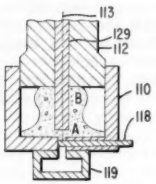
INJECTION MOLDING MACHINE WITH A ROTARY PLUNGER AND ROD MIXING AND WORKING CHAMBER

Bryce Maxwell, 19 McCosh Cir., Princeton, N.J. 08540

Continuation of Ser. No. 204,514, Dec. 3, 1971, abandoned. This application Sept. 11, 1973, Ser. No. 396,140

Int. Cl. B29f *1/02*

U.S. Cl. 425—207 **5 Claims**



1. Apparatus for use in mixing and working plastic materials comprising a cylindrical chamber, a cylindrical plunger closing one end of said chamber and movable axially within said chamber into and out of contact with material in said chamber, means for effecting relative rotation between said plunger and chamber with respect to each other to mix and work material within said chamber, an exit port in the end of the chamber opposite to said plunger, a cylindrical rod-like member of substantially smaller diameter than said plunger extending axially of and being axially displaceable with respect to said plunger while being held axially fixed within said cylindrical chamber, means for rotating said rod-like member to cause material in said chamber to flow axially along said rod-like member when said plunger is moved in a direction away from said exit port and to be folded back upon itself when said plunger is advanced toward said exit port to aid in mixing and working the material.

3,844,700

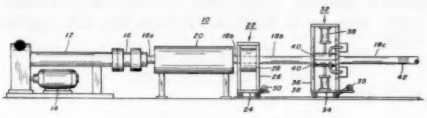
METHOD AND APPARATUS FOR FORMING CONTINUOUS THERMOPLASTIC PIPE HAVING CORRUGATED SEGMENTS

Nickolas N. Sokolow, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Feb. 6, 1973, Ser. No. 330,002

Int. Cl. B29d *23/18, 23/04*

U.S. Cl. 425—326 R **9 Claims**



1. Apparatus for forming continuous thermoplastic pipe which has spaced corrugated wall portions along the length of the pipe comprising:

a. continuous pipe forming means for forming pipe of a predetermined diameter and wall thickness and for cooling the formed pipe;

b. heating means for selectively heating spaced portions of the formed pipe after it leaves the pipe forming means;

c. corrugation forming means for engaging the heated spaced portions of the continuously advancing pipe, and forming discrete corrugated sections; and

d. coordinating means for coordinating movement of the heating means and corrugation forming means to the travel of the pipe including means for moving the heating and corrugating means with the continuously advancing pipe.

3,844,701

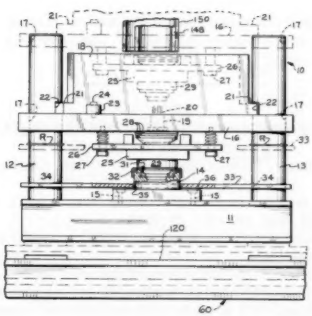
COMPRESSION MOLDING APPARATUS

Bruce C. Rockwell, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 13, 1973, Ser. No. 388,012

Int. Cl. B29c *3/00*

U.S. Cl. 425—348 **8 Claims**



1. An apparatus for compression molding articles comprising mold carrier means having molds thereon for molding a blank part, a first indexing means for transporting said carrier means, a curing oven, a second indexing means within said

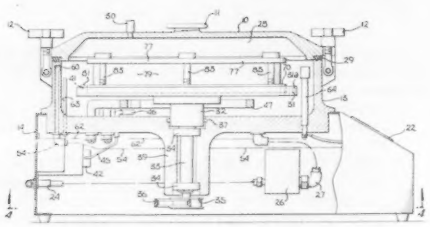
oven for transporting said carrier means within said oven, and means for alternately translating said carrier means from said first indexing means to said second indexing means and back to said first indexing means, said first and second indexing means and said translating means moving said carrier means through stations to close said carrier means, lock under molding pressure, heat, open, and extract a molded part therefrom.

3,844,702

CENTRIFUGAL CASTING AND CURING APPARATUS

Charles L. Dimmer, Toledo, Ohio, and Eric Perry, Arcadia, Calif., assignors to Nobilium Products, Inc., Los Angeles, Calif.

Filed Dec. 4, 1972, Ser. No. 311,759
Int. Cl. B29c *5/04, 25/00*
U.S. Cl. 425—425 **14 Claims**



1. An apparatus for centrifugal casting and for curing dental restorations comprising:

a housing defining a pressure vessel;

a rotor assembly for rotation disposed within said housing for centrifugally casting said dental restorations;

water flow control means for permitting water to enter said pressure vessel for curing said dental restorations after casting and to be drained from said pressure vessel coupled to said housing;

heating means for heating water in said vessel;

gas flow control means for permitting gas to enter and leave said pressure vessel such that said vessel may be pressurized for curing said dental restorations; and,

a flask including a plurality of sections for receiving dental restoration molds coupled to said rotor assembly for rotation with said assembly during said centrifugal casting;

whereby a plurality of dental restorations may be centrifugally cast simultaneously in said flask and then cured in said vessel.

3,844,703

KNOCK-OUT ARRANGEMENT FOR AN INJECTION MOLDING MACHINE

Gunter Hutter, Emmestrasse 2, 6844 Altach, Austria

Filed Oct. 2, 1973, Ser. No. 402,817
Claims priority, application Austria, Oct. 3, 1972, 8478/72; Switzerland, Feb. 28, 1973, 2915/73
Int. Cl. B29c *7/00*
U.S. Cl. 425—436 **11 Claims**

1. In a knock-out arrangement for an injection molding machine including a support; a knock-out member movable on said support in a predeterminded direction toward and away from a rest position, a first coupling member fixedly mounted on said knock-out member, a second coupling member movable in said direction toward and away from a position of engagement with said first coupling member, and actuating means for moving said second coupling member toward and away from said position thereof, and for moving said knock-out member toward and away from said rest position when said coupling members are engaged, the improvement which comprises:

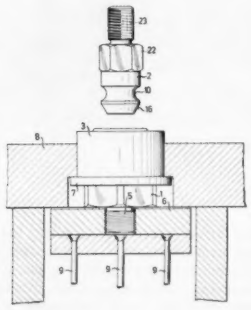
a. at least one locking element of circular cross section movably secured on one of said coupling members,

1. the other coupling member being formed with a recess aligned with said at least one locking element transversely of said direction in said position of engagement;

b. yieldably resilient means biasing said at least one locking element inward of said recess and thereby locking said coupling members for joint movement in said direction when said at least one element is received in said recess; and

c. guide means on said support and on said one coupling member cooperating for retracting said at least one locking element from said recess in response to movement of said knock-out member toward said rest position,

1. one of said guide means including a guide face associated with each locking element and obliquely inclined relative to said direction, said guide face engaging the associated locking element during said retracting.

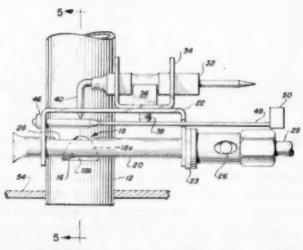


3,844,704

BURNER AND IGNITION SYSTEM

Robert C. Helke, Walworth, Wis., assignor to La Mere Industries, Inc., Walworth, Wis.

Filed Aug. 17, 1973, Ser. No. 389,195
Int. Cl. F23q *9/12*
U.S. Cl. 431—43 **12 Claims**



1. A burner assembly comprisng a burner tube having a flame-supporting outlet, an ignition port in said tube upstream from said flame-supporting outlet, baffle means associated

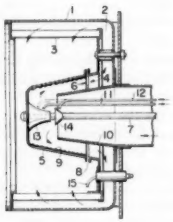
with said ignition port and extending into the burner tube at said ignition port for emitting a small turbulent portion of the fluid fuel passing through said burner tube from said ignition port, said baffle means being a scoop-shaped indentation in the burner tube wall with the open end of the scoop defining a portion of the periphery of the ignition port and defining the downstream edge of the baffle in the form of a reverse rounded edge, and ignition means for igniting the emitted turbulent portion whereby said fuel within the burner tube is also ignited and the flame travels from said ignition port through the burner tube to said flame-supporting outlet.

3,844,705

GASIFIED FUEL BURNER FOR BURNING A LIQUID FUEL AND WATER IN A GASEOUS MIXTURE

Kingo Miyahara, Tokyo, Japan, assignor to Kabushiki Kaisha Dowa, Tokyo, Japan

Filed Oct. 29, 1973, Ser. No. 410,757
Claims priority, application Japan, May 18, 1973, 48-55335; June 19, 1973, 48-73292; June 19, 1973, 48-73293
Int. Cl. F23d *11/04*
U.S. Cl. 431—168 **3 Claims**



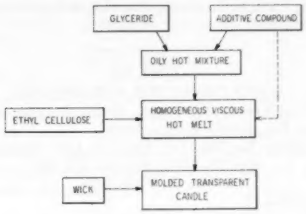
1. A gasified fuel burner adapted to convert a liquid fuel and water into a mixture of a gasified fuel and steam for combustion of the fuel in gasified state, comprising a combustion cylinder, a gas chamber defined in said combustion cylinder and formed with an opening substantially in its central portion, a diffuser-vaporizer rotatably mounted in said combustion cylinder and formed with an opening disposed in spaced juxtaposed relationship to said opening in said gas chamber, with a fuel scattering clearance of a size large enough for the liquid fuel to move therethrough and scatter in the combustion cylinder in atomized particles formed between the opening in the diffuser-vaporizer and the opening in the gas chamber to sustain combustion of the liquid fuel, a frusto-conical blast supply member extending through the gas chamber into the diffuser-vaporizer to supply a stream of air under pressure to the diffuser-vaporizer and then to the gas chamber, a steam generating annular chamber provided at the end of a flame ejecting opening of the combustion cylinder for heating supplied water by the heat produced by combustion of the fuel in liquid state and generating superheated steam therein, a steam line connected at one end to said steam generating annular chamber and opening at the other end in said frusto-conical blast supply member so that the superheated steam produced in said steam generating annular chamber is mixed with the gasified fuel produced in said diffuser-vaporizer together with the stream of air supplied under pressure through the blast supply member, and a combustion plate provided at the periphery of the gas chamber for ejecting therethrough a mixture of gasified fuel and superheated steam together with the stream of air supplied under pressure through the blast supply member whereby combustion of the gasified fuel can be carried out satisfactorily.

3,844,706

CANDLES AND MANUFACTURE THEREOF

Elefterios Tsaras, 92455 Irving Park Rd., Schiller Park, Ill. 60176

Filed Oct. 30, 1973, Ser. No. 411,050
Int. Cl. F23d *3/16*
U.S. Cl. 431—288 **23 Claims**



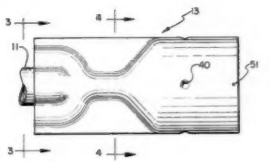
1. A candle comprising a body having therein a wick,
A. said body comprising on a 100 weight percent basis a thermoplastic blend of --
1. from about 6 to 55 weight percent ethyl cellulose and 2. from about 45 to 94 weight percent of at least one glyceride,
B. said wick being adapted to
1. be impregnated by said blend when said blend is in a heated, liquified form, and
2. provide capillary action for such heated, liquified form of said blend,
C. the combination of said body and said wick being such that, when an upper end of said wick is in a generally vertical configuration and is ignited, said wick burns with a generally luminous flame and combusts gradually both itself and said body.

3,844,707

LOW COST, WIND PROOF CIGARETTE LIGHTER BURNER

Alex F. Wormser, Marblehead, Mass., assignor to Wingaersheek Turbine Company, Inc., Peabody, Mass.

Continuation-in-part of Ser. No. 142,402, May 11, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,534
Int. Cl. F23d *13/12*
U.S. Cl. 431—347 **7 Claims**



1. In a cigarette lighter operating on compressed gas fuel provided through a fuel stem, a burner comprising:
a sheet metal tubular member, having a nominal diameter of ¼ inch or less, shaped adjacent one end to provide air entrance channels on either side of said fuel feed stem, said tubular member being shaped intermediate its ends providing a jet pump tube coaxial with said fuel jet, the fuel jet thereby operating to entrain air drawn through said entrance channels; and
inserted into the other end of said tubular member, a disk-like sheet metal flameholder having a plurality of circumferentially disposed vanes struck from the material of said

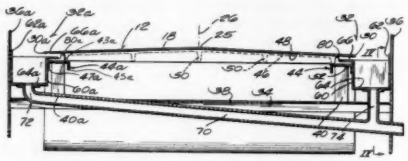
flameholder, leaving a substantial central hub, said vanes being inclined with respect to the plane of the disk-like flameholder thereby to produce a helical spin of gases passing through said flame holder, whereby a recirculation zone is formed downstream of said hub allowing hot, burned gases to be recirculated and ignite incoming air-fuel mixture, the spin of gases causing cooler, unburned gases to tend to the periphery of the burner with the hotter gases tending toward the axis of the burner facilitating recirculation and preventing extinguishment due to cold wall effects.

3,844,708

OVEN CONVEYOR AND METHOD

Gerald Lee Voshel, Kentwood, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.

Division of Ser. No. 343,112, March 20, 1973. This application Jan. 23, 1974, Ser. No. 435,657
Int. Cl. F27b 9/24
U.S. Cl. 432—11 **4 Claims**



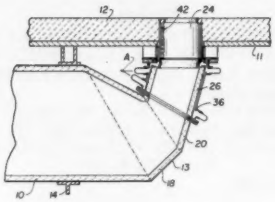
1. A method of baking particularly suited to commercial-type operations, said method comprising the steps of: providing an oven means for supplying baking heat; providing a normally flat conveyor band and arranging it to pass continuously through said oven means; temporarily deforming said normally flat band as it passes through said oven means whereby said normally flat band has a generally convex configuration for draining fluids produced during baking to each lateral edge of said band; providing means for catching said fluids from said band and removing said foods from said oven means; and placing uncooked foods upon said band and moving said band through said oven means for baking said foods.

3,844,709

ROTARY KILN WITH COOLING CELLS

Gerard Ghestem, Lambersart, France, assignor to Fives-Cail Babcock, Paris, France

Filed Jan. 3, 1974, Ser. No. 430,401
Claims priority, application France, Jan. 3, 1973, 73/00, 096
Int. Cl. F27b 7/38
U.S. Cl. 432—80 **11 Claims**



1. A rotary kiln comprising
1. a kiln body having an output end and defining a port at the output end,
2. a cooling cell body mounted on the kiln body for rotation therewith, and
3. a feed channel interconnecting the kiln and cooling cell bodies in a fluid-tight manner and providing communication between the interiors of the kiln and cooling cell bodies through the port, the feed channel including
   a. an expansible bellows sleeve having respective ends fluid-tightly affixed respectively to the kiln and the cooling cell body, and
   b. a tube section having respective ends, the tube section being positioned within the bellows sleeve and having a refractory interior wall, and one of the tube section ends being affixed to a selected one of the bodies while the other end is free, material falling out of the rotary kiln body through the port being guided by the tube section into the cooling cell.

CHEMICAL

3,844,710
DYEING POLYESTERS OR CELLULOSIC ESTERS WITH PRINTING PASTE CONTAINING BUTANE DIOL POLYGLYCOL ETHER AND NAPHTHOL POLYGLYCOL ETHER

Friedrich Reinhardt, Frankfurt am Main, and Kurt Roth, Hofheim/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

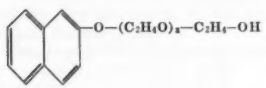
Filed Sept. 28, 1972, Ser. No. 293,143

Claims priority, application Germany, Sept. 30, 1971, 2148867

Int. Cl. D06p *1/82*

U.S. Cl. 8—62 **2 Claims**

1. A process for printing disperse dyes on polyester, cellulose-triacetate or cellulose-2,5-acetate which consists of applying onto the textile material a printing paste of usual composition which contains additionally 2 to 7 percent of a fixing auxiliary mixture of a compound of the formula



(1)

wherein x is zero or an integer from 1 to 4 and of a compound of the formula

$$HO\text{-}C_4H_8\text{-}O[A]\text{-}OC\text{-}R_1 \qquad (2)$$

wherein R_1—CO— is alkanoyl with 12 to 22 carbon atoms and [A] is a polyethylene oxide and/or a polypropylene oxide chain consisting of from three to 20 members, in a ratio of 1:10 to 10:1 by weight, and fixing the prints under the conditions used for fixing disperse dyes.

3,844,711
LOW-FROTH, WATER-SOLUBLE DYEING AUXILIARIES

Manfred Daeuble, Frankenthal; Knut Oppenlaender, and Rolf Fikentscher, both of Ludwigshafen, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Jan. 12, 1972, Ser. No. 217,226

Claims priority, application Germany, Jan. 22, 1971, 2102899

Int. Cl. D06p *1/82*

U.S. Cl. 8—93 **7 Claims**

1. A textile dyeing liquor having a pH of between 2 and 8, containing a dyestuff and having added thereto a low-froth, water-soluble dyeing auxiliary consisting essentially of:

a. 10 to 70 percent by weight, with reference to the dyeing auxiliary, of a non-ionic surfactant;

b. 10 to 70 percent by weight, with reference to the dyeing auxiliary, of an esterification product from 2 molar equivalents of a mixture of higher fatty acids containing not less than 30 percent oleic acid and from one molar equivalent of a block copolymer, carrying 2 terminal hydroxyl groups, of ethylene oxide and 1,2-propylene oxide having a molecular weight of about 1,500 to 7,000, the sum of (a) and (b) being less than or equal to 95 percent by weight; and

c. less than 20 to 5 percent by weight, with reference to the dyeing auxiliary, of water.

3,844,712
TREATMENT OF DYED POLYAMIDES

Gerrit Frickenhaus, Wuppertal-Ronsdorf, and Hans Gunter Otten, Koeln-Buchheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

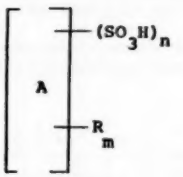
Filed Feb. 4, 1969, Ser. No. 796,545

Claims priority, application Germany, June 15, 1968, 1769613[U]

Int. Cl. D06p *1/84*

U.S. Cl. 8—165 **3 Claims**

1. Process for the improvement of the wet fastness properties of anionically modified synthetic polyamide textile materials dyed with cationic dyestuffs comprising treating the materials with aqueous liquors, which contain alkali or ammonium salts of formaldehyde condensation products of aromatic sulfonic acids of the formula:



in which

A signifies diphenyl ether radical,

R signifies an alkyl radical containing 1–4 carbon atoms,

m a whole number from 0–2 and

n a number from 0.5–2.

3,844,713
ALKYL AND ARYL PHOSPHITES TO INHIBIT OZONE FADING OF DYED POLYAMIDES

Peter Reginald Saunders; Brian Armstead Dementi, and Robert Alden Lofquist, all of Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 11, 1972, Ser. No. 243,061

Int. Cl. D06p *5/00*

U.S. Cl. 8—165 **5 Claims**

1. In a method for dyeing nylon fibers with anthraquinone dyes, the improvement comprising coating the fiber with a substance consisting essentially of an aryl hydrocarbon, aralkyl hydrocarbon, saturated alkyl or a polymeric propoxylated phenyl organic phosphite having a molecular weight of from about 200 to about 2500 so that from about 0.7 to about 3 percent on weight of fiber of said phosphite remains on said fibers after dyeing whereby said dyed polycarbonamide fibers have improved dyefastness when exposed to ozone, said coating being applied subsequent to the dyeing fiber.

3,844,714
METHOD OF IMPROVING SHAPED FIBRE FORMING POLYMERS

Michael King McCreath, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 806,032, March 5, 1969, abandoned, which is a continuation of Ser. No. 424,823, Jan. 11, 1965, abandoned. This application Feb. 8, 1973, Ser. No. 330,562

Int. Cl. D06p *5/00*

U.S. Cl. 8—168 **1 Claim**

1. A process for improving the dyeability of meltspun polyethylene terephthalate which is in the form of a fiber, filament, yarn or fabric, comprising passing undrawn polyethylene

terephthalate filamentary extrudate through a bath containing vinylpyridine and benzoin, said vinylpyridine being selected from the group consisting of 2-vinylpyridine and 4-vinylpyridine said vinyl pyridine thereby being caused to diffuse uniformly into the polyethylene terephthalate filamentary extrudate, drawing the polyethylene terephthalate filamentary extrudate over a heated member and then polymerizing the vinylpyridine, in situ, to a degree such that diffusion out of the polyethylene terephthalate filamentary extrudate is inhibited, the polymerizing step being effected by treating the polyethylene terephthalate filamentary extrudate which contains the vinylpyridine, with a catalyst selected from the group consisting of boron trifluoride etherate, benzyl peroxide, peracetic acid, azodiisobutyronitrile and ultra-violet radiation.

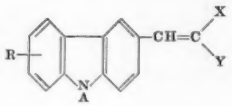
3,844,715

POLYMERIC MATERIALS COLORED WITH YELLOW METHINE DYES AND PIGMENTS

Edgar E. Renfrew, Lock Haven, Pa., assignor to American Aniline Products, Inc., Paterson, N.J.

Filed Dec. 29, 1972, Ser. No. 319,602
Int. Cl. C07d *27/68*
U.S. Cl. 8—179 **4 Claims**

1. A polyester fabric material which comprises a polyester fibrous material containing a compound of the formula



wherein R is hydrogen, chlorine, bromine, nitro or acetamido; A is lower alkyl, benzyl or cyano(lower alkyl); each of X and Y is independently cyano, lower carbalkoxyl,

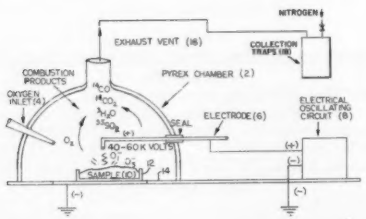
or $R_1—SO_2$, R_1 being a member selected from the group consisting of lower alkyl, chloro(lower alkyl), bromo(lower alkyl), cyano(lower alkyl), phenyl, (lower alkyl)-phenyl, chlorophenyl, bromophenyl, nitrophenyl, and cyanophenyl.

3,844,716

COMBUSTION METHOD APPARATUS FOR PREPARING SAMPLES FOR LIQUID SCINTILLATION COUNTING

John E. Noakes, Athens, Ga., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Dec. 1, 1971, Ser. No. 203,796
Int. Cl. G01n *31/12*; **H05b** *7/18*
U.S. Cl. 23—230 PC **6 Claims**



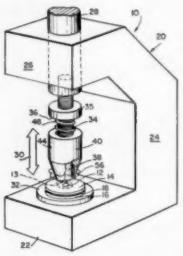
1. A method for the combustion of organic materials containing a radioactive isotope in an oxygen atmosphere to produce gaseous by-products for subsequent radioactivity measurement comprising the steps of providing a combustion chamber including an electrically conductive plate adapted to receive a sample of material to be burned and an electrode positioned near the sample, introducing oxygen into said combustion chamber from an oxygen source, energizing said electrode to produce a continuous high intensity spark therefrom to said electrically conductive plate to form singlet and triplet oxygen to react locally at the surface of the sample and to burn the sample at said surface, continuing the localized oxidation until combustion of the total sample is complete, and collecting gaseous products of combustion produced thereby.

3,844,717

PRESS FOR PROGRESSIVE COMPRESSION OF LIQUID-EARING ABSORBENT ARTICLE

Lester A. Sodickson, Newton, Mass., and Franklin Lim, Richmond, Va., assignors to Damon Corporation, Needham Heights, Mass.

Filed Apr. 11, 1972, Ser. No. 243,028
Int. Cl. B30b *9/04*; **G01n** *31/00*
U.S. Cl. 23—253 R **17 Claims**



1. A press for squeezing liquid material from an absorbent article, said press having a pressure assembly movable relative to a platen member for pressing the article therebetween, said press further comprising

A. a first foot member in said pressure assembly and having a first article-pressing surface facing said platen member, said first foot member being movable with said pressure assembly to compressively engage said first surface against an article on said platen member with a first force,

B. a second foot member in said pressure assembly and having a second article-pressing surface facing said platen member along a path encircling said first surface, said second foot member being movable with said pressure assembly and in the same direction as said first foot member to compressively engage said second surface against an article on said platen member with a second force different from said first force, and said second foot member compressively engaging said article prior to said first foot member upon movement of said pressure assembly toward said platen member, and said second foot member forming with said first foot member a liquid-tight seal between said first and second surfaces.

3,844,718

FROZEN FOOD DEFROSTING INDICATOR

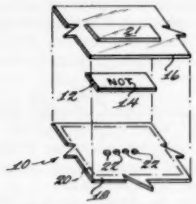
Herman Cohen, Kennebunk, Maine 04043

Filed May 1, 1972, Ser. No. 249,019
Int. Cl. G01n *31/22*
U.S. Cl. 23—253 TP **6 Claims**

1. A defrosting indicator for frozen food packages comprising:

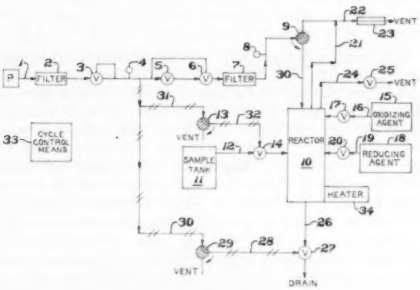
a strip of hygroscopic material having indicia printed thereon in water-soluble medium, said strip having an outer side and an opposing, under side;

a transparent, water-tight outer cover for the outer side of said strip, through which said indicia may be viewed;
a water vapor-permeable under-cover for the under side of



said strip through which said strip may be placed in vapor communication with frozen food to be monitored for thawing; and means securing the two covers together perimetrically of the strip.

3,844,719
MERCURY METAL ANALYZER
David L. Hammitt, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 1, 1972, Ser. No. 258,730
Int. Cl. G01n *21/22, 33/20*
U.S. Cl. 23—253 R **2 Claims**

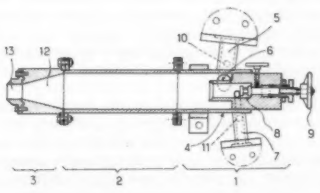


1. A mercury-metal analyzer comprising:
a. a reactor including reactor vent means;
b. a sample feed means to said reactor;
c. a reducing agent feed means to said reactor;
d. a separate oxidizing agent feed means to said reactor;
e. a separate elevated pressure gas feed means to said reactor;
f. a means for maintaining said gas feed means at an elevated pressure with respect to ambient pressure;
g. an U.V. spectrophotometer means in series with said reactor for measuring the absorbance of mercury-metal in the product of said reactor; and
h. an electric cycle control means for sequentially and repetitively:
1. simultaneously feeding sample to the reactor from the sample feed means and venting the reactor;
2. feeding oxidizing agent to the reactor from the oxidizing agent feed means;
3. sealing the reactor during oxidation of the sample;
4. venting the reactor after oxidation of the sample;
5. feeding reducing agent to the reactor from the reducing agent feed means;
6. thereafter feeding the reaction product from the reactor to the U.V. spectrophotometer means by gas from the elevated pressure gas feed means; and
7. purging the reactor with gas from the elevated pressure gas feed means.

3,844,720
URINOMETER
Richard Vaughn Jones, DeQueen, Ark., assignor to Millwood Laboratories, DeQueen, Ark.
Filed Jan. 3, 1973, Ser. No. 320,785
Int. Cl. G01n *9/10, 33/16*
U.S. Cl. 23—259 **5 Claims**

1. A device for handling liquids comprising, in combination, an upright tubular member open at the top to receive liquid, means supporting the upright tubular member,
a plug having an aperature extending axially therethrough received in said tubular member at a selected position intermediate its ends,
said upright tubular member having an aperture in its wall at a position below said plug,
a second tubular member having one end thereof received in the aperture in said plug and communicating with the space in said upright tubular member above said plug and extending downwardly through said tubular member below said plug and through and out beyond said aperture in the wall of said upright member and
means associated with said second tubular member and outside of said upright tubular member for controlling passage of liquid through said second tubular member.

3,844,721
REACTOR SUITABLE FOR REACTIONS BETWEEN TWO FLUIDS
Jean M. Cariou, Tarnos, and Jean Juhasz, Biarritz, both of France, assignors to Etablissements Gardinier, Neuilly-sur-Seine, France
Filed Mar. 13, 1973, Ser. No. 340,707
Claims priority, application France, Sept. 20, 1972, 72.33271
Int. Cl. C05b *1/10;* **B01f** *15/00*
U.S. Cl. 23—259.2 **4 Claims**



1. A reactor apparatus, comprising:
an outer tubular member which is closed at one end thereof

and open at the other end thereof; an inner tubular member extending axially from the closed end of said outer tubular member partway toward the open end thereof, said inner tubular member being substantially coaxial with and radially spaced from said outer tubular member and defining therewith an annular zone which opens into a mixing zone beyond the inner end of said inner tubular member, said inner tubular member also having an internal chamber which is closed at its outer end and which opens at its inner end into the mixing zone;

said outer tubular member having a first tangential inlet into said annular zone whereby a first fluid can be flowed in a tangential direction into said annular zone and can flow in a helical path into said mixing zone;

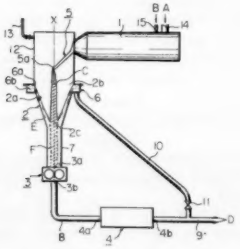
said inner tubular member having a second tangential inlet into said internal chamber whereby a second fluid can be flowed in a tangential direction into said internal chamber and can flow in a helical path into said mixing zone;

an axially movable piston valve disposed adjacent the outer end of said internal chamber and adapted to be moved axially across said second tangential inlet to control the rate of flow of said second fluid into said internal chamber, and displacing means extending through said closed outer end of said internal chamber for moving said piston valve axially within said internal chamber.

3,844,722
APPARATUS FOR THE CONTINUOUS PREPARATION OF A POLYMERIC SOLUTION

Yoshijiro Tabara; Hiroshi Akiyama; Shoji Sato, all of Otake; Seiji Miyata, Kuga, and Kenichi Sakunaga, Otake, all of Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Division of Ser. No. 123,575, March 12, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,533
Claims priority, application Japan, Mar. 17, 1970, 45-21964
Int. Cl. B01d *11/02*
U.S. Cl. 23—267 R **5 Claims**



1. An improved apparatus for continuously preparing a solution of a polymeric material in a solvent comprising:

a. uniting funnel means having a downwardly converging inside surface, an upper entrance and a bottom exit,

b. mixer means for preparing a slurry from a polymeric material and a solvent, having a slurry spout positioned substantially just above said bottom exit of said uniting funnel means,

c. flow means located at an upper portion of said uniting funnel means and surrounding said slurry spout of said mixer for flowing a solution of said polymeric material in said solvent downwardly along said converging inside surface of said uniting funnel means wherein said uniting funnel means, said slurry spout, and said flow means are positioned relative to each other for forming a flow in said bottom exit comprising a core of said slurry and a sheath of said solution of said polymeric material in said solvent,

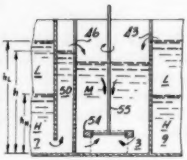
d. dissolving means connected to said bottom opening of said uniting funnel means for receiving the core-in-shield flow and for dissolving said polymeric material into said solvent, and

e. solution recycle means between said dissolving means and said solution flowing means, whereby a portion of the resultant solution in said dissolving means is recycled into said solution flowing means.

3,844,723
MULTI-STAGE COUNTER-CURRENT LIQUID-LIQUID CONTACT APPARATUS

Shigeru Takahata; Mitsuhiro Suemura; Masaru Noguchi, and Kenji Ohdan, all of Takefu, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Continuation of Ser. No. 24,991, April 2, 1970, abandoned. This application July 3, 1972, Ser. No. 268,713
Claims priority, application Japan, Apr. 14, 1969, 44-29185
Int. Cl. B01d *11/04*
U.S. Cl. 23—270.5 **8 Claims**



1. A multi-stage counter-current liquid-liquid contact apparatus comprising a multi-stage container consisting of a bottom, a first end wall and a second end wall spaced from said first end wall and said first and second end walls extending upwardly from said bottom, and a first side wall and a second side wall spaced from said first side wall and said first and second side walls extending upwardly from said bottom and extending between said end walls, a plurality of laterally spaced longitudinal partition walls extending between said first and second end walls and dividing the space bounded by said bottom, said end walls and said side walls into a plurality of liquid-liquid contact stages, a plurality of transverse partition walls each located within a different one of the stages and extending transversely of and between said longitudinal partition walls and dividing each stage so that it consists of a mixing chamber and a settling chamber, within each pair of adjacent stages said mixing chamber in one of the stages extends from said first end wall to said transverse partition walls within the stage with said settling chamber extending from said transverse partition walls to said second end wall and said mixing chamber in the other one of the pair of adjacent stages extends from said second end wall to said transverse partition wall with said settling chamber in said stage extending from said transverse partition wall to said first end wall so that along each said first and second end walls said mixing chambers and settling chambers in adjacent stages are arranged in an alternating arrangement, first inlet means for supplying a first liquid into said mixing chamber located in the stage adjacent said first side wall, second inlet means for supplying a second liquid which is lighter than the first liquid into said mixing chamber located in the stage adjacent said second side wall, a first outlet means for withdrawing said first liquid from said settling chamber located in the stage adjacent said second side wall, a second outlet means for withdrawing the second liquid from said settling chamber located in the stage adjacent said first side wall, each of said mixing chambers which is located between a pair of said settling chambers in adjacent stages is arranged to receive separate flows of the first and second liquids directly from said settling chambers in the adjacent stages and has an overflow inlet for the lighter second liquid in the one of said longitudinal partition walls defining one side

of said mixing chamber and another overflow inlet for the heavier first liquid in said longitudinal partition wall defining the opposite side of said mixing chamber, means forming an upwardly extending duct in each said settling chamber with the lower end of said duct adjacent said bottom of said container being open for admitting the heavier first liquid thereto and the upper end of said duct located adjacent and above one of said another overflow inlet for the heavier first liquid to the adjacent said mixing chamber or said first outlet means for the first liquid, said duct laterally separating one of said another overflow inlets for the heavier first liquid directly into the adjacent said mixing chamber or said first outlet means for the first liquid from the body of lighter and heavier liquid within said settling chamber, the overflow inlet for the heavier first liquid is located below said overflow inlet for the lighter second liquid and above the level of the mixture within said mixing chamber with said overflow inlets for the first and second liquids arranged so that the equation

$$h \cdot p_H = (h_L - h_H)\, p_L + h_H \cdot p_H$$

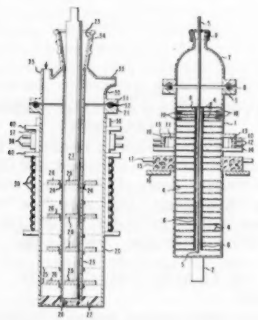
is satisfied, where h denotes the height of the heavier liquid in said ducts extending between the bottom of said container and the one of said overflow inlets for the heavier first liquid or said first outlet means for the heavier first liquid, p_H denotes the density of the heavier first liquid, h_L denotes the height of the liquid surface in the settling chamber, h_H denotes the height of the interface between the heavier first liquid and the lighter second liquid in said settling chamber, and p_L denotes the density of the lighter second liquid, means forming a discharge passage at the bottom of said container between said mixing chamber and settling chamber in the same stage, mixing means located within each of said mixing chambers and comprising an impeller having blades for imparting a mixing action throughout the full height of the mixture of the first liquid and the second liquid contained within the space in each stage forming said mixing chamber, each said impeller is located adjacent the bottom of the container within said mixing chamber within which it is located for mixing the first and second liquids and for directing the mixture through said discharge passage into said settling chamber in the same stage with said mixing chamber, and each said discharge passage being located substantially below the level of the interface between the heavier first liquid and a lighter second liquid in said settling chamber to which said discharge passage opens.

3,844,724

ZONE-MELTING APPARATUS

Gilbert J. Sloan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 27, 1971, Ser. No. 212,126
Int. Cl. B01j *17/03*
U.S. Cl. 23—273 SP **4 Claims**



1. In a zone melting apparatus that includes a cylindrical sample-holding container,

heating and cooling elements alternately adjacent one another surrounding the container, and

means for providing longitudinal relative motion between the container and said heating and cooling elements, whereby at least one molten zone is formed in a normally solid sample container in said container and moves longitudinally in said container with said heating and cooling elements, the improvement which comprises:

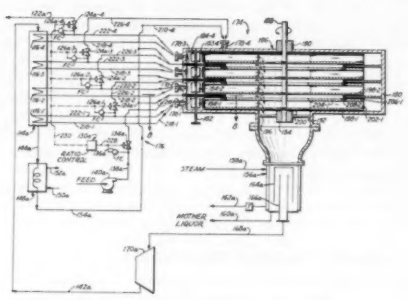
a plurality of thermally conducting members radially disposed within the container, spaced at fixed positions along the length thereof and extending into the sample, at least some of said members being independently rotatable stirrer members while in the molten zone of the sample, and means to rotate said rotatable stirrer members while in said molten zone said sample holding container being substantially horizontal and said thermally conductive members being perforate discs spaced alone an axial aligning tube, in said container at least some of said discs being stirrer members having weights attached unsymmetrically thereto whereby said stirrer members oscillate in an arc while in a molten zone on rotation of said container.

3,844,725

METHOD FOR SEPARATING AND REFINING BY SINGLE STAGE OR MULTI-STAGE CENTRIFUGAL CRYSTALLIZATION

Vratislav Nenicka, 2362 Haymaker Rd., Monroeville, Pa. 15146

Filed Apr. 10, 1972, Ser. No. 242,561
Int. Cl. B01d *9/02*
U.S. Cl. 23—300 **10 Claims**



1. A method of refining a crystallizable product from a substantially liquid feed comprising said product in non-crystalline form and impurities, wherein the product crystals have a higher specific gravity than their mother liquor, and wherein the product crystals melt at a temperature less than the temperature at which they decompose, comprising the steps of selecting an auxiliary liquid which will vaporize at the operating temperature and pressure at which the product crystals are formed, subjecting the charge of feed and auxiliary liquid to a region of centrifugal force and said operating temperatures and pressure to cause the auxiliary liquid to gradually vaporize and absorb heat and to simultaneously cause crystals of said product to form to produce said heat and which crystals immediately upon formation migrate outwardly while the mother liquor immediately migrates inwardly countercurrent to the flow of newly formed product crystals, whereby heat flow is balanced in said region and whereby product crystals migrate outwardly in increasing concentration and impurities migrate inwardly in increasing concentration said step of causing simultaneous auxiliary liquid vaporization, crystal formattion, and crystal and mother liquor migration being performed in a relatively large number of relatively small radially disposed separation cells, wherein said

centrifugal force is generated by causing said cells to rotate about their common axis, continuously supplying charge stock to said separation cells, and continuously removing refined product crystals which have migrated radially outwardly of said cells.

3,844,726

PROCESS FOR MANUFACTURING GRANULES CONTAINING SODIUM CHLORITE IN A FLUIDIZED BED DRIER

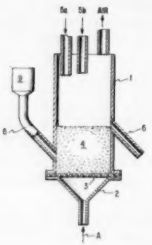
Jose Luis Denaeyer, and Willy Kegelart, both of Brussels, Belgium, assignors to Selvay & Cie, Brussels, Belgium

Continuation-in-part of Ser. No. 106,546, Jan. 14, 1971, abandoned. This application Apr. 12, 1972, Ser. No. 243,252

Claims priority, application Belgium, Apr. 13, 1971, 102099

Int. Cl. B01d *9/00*; **C01b** *11/10*

U.S. Cl. 23—301 R **6 Claims**



1. A process for the manufacture of granules containing sodium chlorite from an aqueous liquid medium containing sodium chlorite, comprising the steps of evaporating water from said medium by passing said medium into a fluidized bed drier containing a fluidized bed of particles fluidized with a carrier gas having a temperature at the base of the fluidized bed of from 120°C to less than 180°C, while maintaining in said fluidized bed a constant presence of seeds smaller in size than the required granules and maintaining the temperature in the fluidized bed below 80°C.

ERRATUM

For Class 29—182 see:
Patent No. 3,844,011

3,844,727

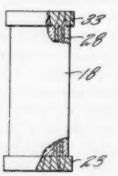
CAST COMPOSITE STRUCTURE WITH METALLIC RODS

Stephen M. Copley, and Bernard H. Kear, both of Madison, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 714,736, March 20, 1968, abandoned. This application June 12, 1970, Ser. No. 45,687

Int. Cl. B32b *15/02*; **B22d** *19/00*

U.S. Cl. 29—191.6 **8 Claims**



1. A cast composite structure comprising

a central body of refractory ceramic material having a plurality of longitudinally extending passages therethrough,

metallic end elements at opposite ends of the central body, and

metallic rods extending through the passages in said central body and integral with said end elements, said metallic rods having a higher rate of thermal contraction than the refractory ceramic material, and said rods placing the central body in compression as the cast structure cools.

3,844,728

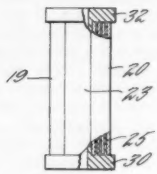
GAS CONTACTING ELEMENT LEADING EDGE AND TRAILING EDGE INSERT

Stephen M. Copley, Madison; Anthony F. Giamei, Middletown; Merton F. Hornbecker, Woodbury, and Bernard H. Kear, Madison, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 714,737, March 20, 1968, abandoned. This application June 22, 1970, Ser. No. 48,228

Int. Cl. B32b *15/02*; **B22d** *19/00*

U.S. Cl. 29—191.6 **9 Claims**



1. A gas contacting element such as a turbine vane including a metallic central body member,

a non-metallic leading edge insert extending the length of said body member, and having a plurality of parallel longitudinal passages therein each extending the entire length of said insert,

a shroud element at each end of and integral with the body member, each of said shroud elements extending over the ends of said insert, and

metallic rods integral with said shroud elements and extending through said longitudinal passages.

3,844,729

METALS HAVING WEAR-RESISTANT SURFACES AND THEIR FABRICATION

Karl Sedlatschek, Ruette; Friedrich Heltzinger, Lechaschau, both of Austria; Horst Beyer, Burscheid, and Ulrich Buran, Opladen-Quettingen, both of Germany, assignors to Schwarzkopf Development Corporation, New York, N.Y.

Filed Mar. 22, 1972, Ser. No. 237,154

Claims priority, application Austria, Mar. 25, 1971, 2583/71

Int. Cl. B32b *15/04*; **C23c** *7/00*

U.S. Cl. 29—195 **26 Claims**

1. A metal machine element having a frictional contact surface coated with a thermally bonded wear-resistant composition applied by flame spraying or plasma gun technique which consists essentially of at least one refractory metal oxide finely dispersed in a flux-free metal matrix.

3,844,730

PROCESS FOR THE MANUFACTURE OF A ROTOR OR SHAFT OF LOW DEFORMABILITY

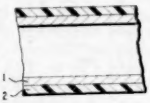
Friedrich Laussermair, Munich, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft

Division of Ser. No. 822,492, May 7, 1969, abandoned. This application Aug. 19, 1971, Ser. No. 173,036

Claims priority, application Germany, May 10, 1968, 1750523

Int. Cl. B23p 11/02

U.S. Cl. 29—446 1 Claim



1. Process for the manufacture of a rotor or shaft of low deformability, especially suitable for high peripheral speeds, comprising:

concentrically disposing a metallic cylinder of high specific modulus of elasticity on the inside of a fiber-reinforced plastic cylinder of low specific modulus of elasticity,

prestressing said two cylinders by a first rotation of the rotor or shaft utilizing the Bauschinger effect occurring in metals, stressing the metallic cylinder beyond its yield point, and

building up an internal stress condition so that, in the rest position, tangentially directed tensile stresses occur in the plastic cylinder and tangentially directed compressive stresses occur in the metallic cylinder, while tensile stresses occur in both cylinders at operating speed.

3,844,731

MOTOR FUEL ADDITIVE

Joseph B. Biasotti, and Frederick G. Oberender, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 14, 1973, Ser. No. 370,106

Int. Cl. C10l 1/18

U.S. Cl. 44—66 5 Claims

1. A motor fuel composition comprising a major amount of a mixture of hydrocarbons in the gasoline boiling range containing a minor detergent and rust inhibiting amount of a diester-amide fuel additive prepared by esterifying a mole of trimer acid produced by the polymerization of an unsaturated aliphatic monocarboxylic acid having between 16 and 22 carbon atoms per molecule with 2 moles of an aliphatic monohydric alcohol having from about 6 to 16 carbon atoms to produce an intermediate diester reaction product and amidating a mole of said intermediate diester reaction product with a mole of dialkanolamine having the formula $HN-(R-OH)_2$ in which R is an alkylene radical having from 2 to 4 carbon atoms to produce said diester-amide.

3,844,732

ADDITIVES FOR FUELS

Marvin V. Coon, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 24, 1972, Ser. No. 296,373

Int. Cl. C10l 1/24

U.S. Cl. 44—72 6 Claims

1. A fuel composition comprising a major amount of a liquid hydrocarbonaceous fuel and in an amount sufficient to provide engine cleanliness a hydrocarbylaminomethylenesulfonic acid, wherein said hydrocarbyl group contains at least 30 carbon atoms.

3,844,733

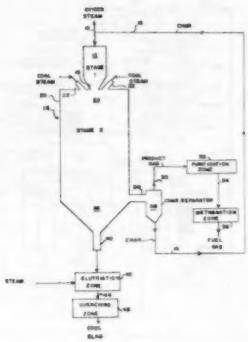
TWO-STAGE DOWNFLOW GASIFICATION OF COAL

Ernest E. Donath, Christiansted, St. Croix, V.I., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 23, 1972, Ser. No. 237,454

Int. Cl. C10j 3/16

U.S. Cl. 48—202 6 Claims



1. A process for gasifying coal comprising,

introducing a partially gasified recycle char into a first gasification zone,

introducing oxygen and steam into said first gasification zone,

reacting said partially gasified char, steam and oxygen in said first gasification zone at a pressure of at least 50 atmospheres,

obtaining as products of reaction in said first gasification zone a first zone synthesis gas comprising hydrogen and oxides of carbon and a molten slag,

reacting said steam, oxygen and char in said first gasification zone a temperature sufficient high to maintain in the molten state said molten slag produced in said first gasification zone,

moving said products of reaction downwardly through said first gasification zone toward a second gasification zone positioned below said first gasification zone,

introducing into said second gasification zone at a location adjacent said first gasification zone coal, steam, said first zone synthesis gas said molten slag, reaction said coal, steam, molten slag and first zone synthesis gas in the second zone at a pressure of at least 50 atmospheres, and at a temperature controlled to assure solidification of said molten slag,

reacting said coal, steam, first zone synthesis gas and molten slag at a rate sufficient to solidify said molten slag before said molten slag contacts and adheres to the walls in said second gasification zone,

obtaining in said second zone a reaction product comprising partially gasified char entrained in a second zone product gas comprising methane, hydrogen and oxides of carbon, withdrawing said second zone product gas and said entrained partially gasified char from said second gasification zone,

separating said partially gasified char withdrawn from said second gasification zone from said second zone product gas withdrawn from said second gasification zone,

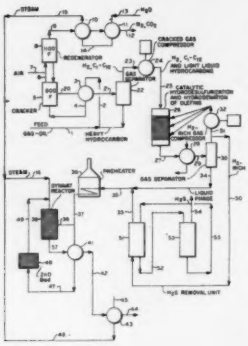
recycling to said first gasification zone at least a portion of said partially gasified char separated from said second zone product gas, and

purifying and methanating said second zone product gas to yield a fuel gas containing methane.

3,844,734
CONVERSION OF HYDROCARBON OIL TO A SYNTHETIC NATURAL GAS

Marvin M. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 27, 1972, Ser. No. 318,701
Int. Cl. C10g *13/02*
U.S. Cl. 48—213 4 Claims



1. The production of a synthetic natural gas or fuel which comprises in combination the steps as follows:
1. catalytically cracking a hydrocarbon oil in presence of a high metals content cracking catalyst under conditions to produce an optimum maximum of C_{12} and lighter products,
2. hydrodesulfurizing said products,
3. separating said products into a liquid fraction and a hydrogen-rich gas,
4. using a portion of the hydrogen-rich gas for said hydrodesulfurization,
5. removing hydrogen sulfide from the remainder of said hydrogen-rich gas, and
6. passing thus treated hydrogen-rich gas together with liquid obtained from the hydrodesulfurization operation to a Synnat or synthetic natural gas producing operation.

3,844,735
PROCESS

Edward F. Steigelmann, and Robert D. Hughes, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

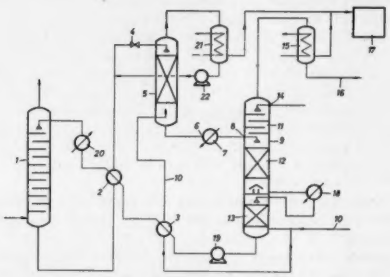
Filed Sept. 13, 1972, Ser. No. 288,782
Int. Cl. B01d *53/22*
U.S. Cl. 55—16 22 Claims

1. A method for separating aliphatically unsaturated hydrocarbon of two to about eight carbon atoms which comprises contacting from a first side of an essentially solid, water-insoluble, semi-permeable membrane, a vaporous mixture containing said unsaturated hydrocarbon with an aqueous liquid barrier disposed in a solid matrix which is said membrane or is in contact with said semi-permeable membrane, said liquid barrier having metal ions which combine with said unsaturated hydrocarbon to form a water-soluble complex, and said liquid barrier being in contact with sufficient amount of a relatively non-volatile, hygroscopic agent to reduce the loss of water from the liquid barrier, the partial pressure of said unsaturated hydrocarbon on a second side of said semi-permeable membrane being sufficiently less than the partial pressure of said unsaturated hydrocarbon in said vaporous mixture to provide separated unsaturated hydrocarbon on said second side of said semi-permeable membrane, and removing separated unsaturated hydrocarbon from the vicinity of said second side of said semi-permeable membrane.

3,844,736
PROCESS FOR THE DRYING OF CRACKING GASES

August Kruis, Pullach; Hans Manhard, Munchen, and Claus Schliebener, Strasslach, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Continuation in-part of Ser. No. 305,257, Nov. 10, 1972, abandoned. This application Dec. 15, 1972, Ser. No. 315,428
Claims priority, application Germany, Nov. 10, 1971, 2155901
Int. Cl. B01j *53/14*
U.S. Cl. 55—32 27 Claims

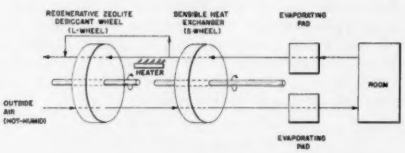


1. In a process for the drying of a cracking gas consisting essentially of a major amount of mono-olefin aliphatic hydrocarbon of 2–4 carbon atoms and a minor amount of impurities comprising water vapor and cyclopentadiene, which process comprises scrubbing said gas with a glycol scrubbing agent to remove water from said gases; and regenerating resultant loaded scrubbing agent by heating:
the improvement comprising stripping said loaded scrubbing agent with an inert gaseous medium at temperatures of between 120° and 180°C to remove most of said cyclopentadiene from said scrubbing agent and heating resultant stripped scrubbing agent to above 180°C to remove additional water.

3,844,737
DESICCANT SYSTEM FOR AN OPEN CYCLE AIR-CONDITIONING SYSTEM

Robert A. Macriss, Deerfield; William F. Rush, Arlington Heights, and Sanford A. Weil, Chicago, all of Ill., assignors to Gas Developments Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 24,373, March 31, 1970, abandoned. This application Dec. 12, 1972, Ser. No. 314,400
Int. Cl. B01d *53/08*
U.S. Cl. 55—34 9 Claims



1. In a method for conditioning air including the steps of:
a. passing outside air through a first portion of a rotating dehydrating L-wheel to produce relatively dry air;
b. passing said relatively dry air through a first portion of a rotating sensible heat exchanging S-wheel to produce relatively cool dry air, for use in an enclosed conditioned space;
c. withdrawing a stream of exhaust air from said conditioned space through an evaporative pad;

d. passing said exhaust air stream through a second portion of said S-wheel whereby said S-wheel is cooled;
e. passing a portion of said exhaust air through a heating section;
f. passing said heated exhaust air through a second portion of said L-wheel to be exhausted to the outdoors; the improvements in said steps passing outside air and exhaust air through respective portions of the L-wheel comprising:

1. continuously contacting said outside air passing through said L-wheel with a desiccant material contained in said L-wheel, which desiccant material consists essentially of a finely powdered crystalline zeolite material, for a time sufficient to permit said zeolite material to sorb water vapor from said air to a water vapor content of less than about 0.003 lbs. H_2O/lb. air, said air having a dry bulb temperature of about 80°F. to 120°F., a wet bulb temperature of about 75°F. to 90°F., and an absolute humidity level of about 0.017 to about 0.022 lbs. H_2O/lb. air,
2. continuously regenerating said zeolite in said L-wheel by heating said zeolite with said heated exhaust air for a time sufficient to return said zeolite to substantially its original water vapor sorption capacity,
3. maintaining said sorption step **1** at a temperature below said regeneration step **2**, and
4. maintaining said steps of sorption and regeneration in a repetitive sequence,

whereby said process shows the improved properties of non-deterioration in the presence of products of combustion, lack of desiccant weepage, a higher coefficient of performance, lower power requirements, smaller L-wheel size, smaller air moving equipment, and greater thermal and chemical stability.

3,844,738

METHOD AND DEVICE FOR DE-AERATING GREASES

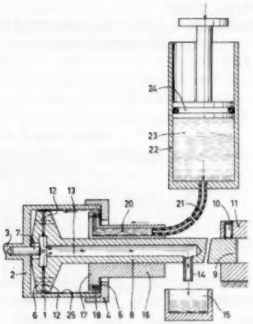
Jacobus Pieter Reinhoudt; Gerrit Remmers, and Jacobus Johannes Cornelius Vandersteen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 321,351, Jan. 5, 1973, abandoned. This application Dec. 3, 1973, Ser. No. 421,070

Claims priority, application Netherlands, Jan. 11, 1972, 7200351

Int. Cl. B01d *19/00*

U.S. Cl. 55—36 **4 Claims**



1. A method of de-aerating greases, comprising feeding the grease to be de-aerated to the inner side of a cylindrical drum which rotates at a very high speed, the grease feed rate being continuous and so high that the grease flows along the inner side of the drum in a thin layer and meanwhile discharges air present therein, collecting the thin layer at some distance from the grease inlet in a stationary duct which extends outside the drum.

3,844,739

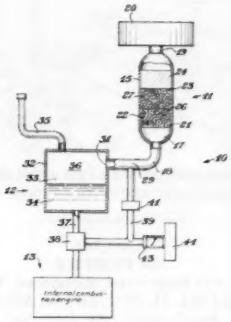
APPARATUS AND METHOD FOR THE PREVENTION OF EVAPORATIVE LOSS OF MIXED ORGANIC LIQUIDS

Turner Alfrey, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 5, 1972, Ser. No. 295,286

Int. Cl. B01d *53/04*

U.S. Cl. 55—74 **9 Claims**



1. In a method for controlling the vapor emission of a vented container of mixed organic liquids, the steps of the method comprising providing a container adapted to receive mixed volatile organic liquids, the container having a vent, the vent providing communication between the interior of the container and a surrounding gaseous atmosphere, the improvement which comprises

interposing between the interior of the container and a terminal open end of the vent a composite sorbing bed, the sorbing bed having at least a first sorbent capable of sorbing and desorbing the highest boiling fraction of the vapor to which it is subjected, said first sorbent being disposed generally adjacent the container, at least a second sorbent capable of sorbing and desorbing the lower boiling component of the liquid mixture, said second sorbent being disposed generally adjacent the terminal portion of the vent remote from the container wherein vapors passing from the container first pass through a first sorbent which sorbs the higher boiling components, and subsequently through a second sorbent which sorbs the lower boiling components, and on passage of gas in the reverse direction the atmosphere desorbs the respective components from the first and second beds.

3,844,740

EXHAUST GAS TREATMENT

Herbert Brandt, Gutehoffnungsring, Germany, assignor to Apparatebau Rothemuhle Brandt & Kritzler, Wenden, Ortsteil Rothemuhle, Germany

Filed Dec. 10, 1973, Ser. No. 423,175

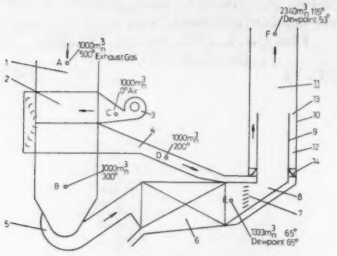
Claims priority, application Germany, Oct. 11, 1973, 2351048

Int. Cl. B01d *47/00*

U.S. Cl. 55—83 **7 Claims**

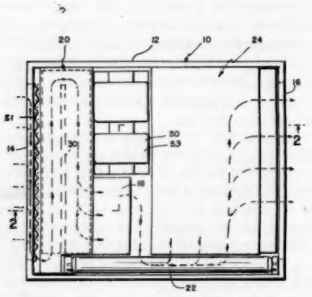
1. A wet treatment plant for hot exhaust gas comprising means for subjecting the exhaust gas to wet treatment, a flue having an outer tube and an inner tubular duct defining an annular space therebetween, means for providing a supply of gas heated to a temperature above the dew point of the wet treated exhaust gas, means for introducing the heated gas and the treated gas separately into the duct and the space respectively, said duct being shorter than said tube to define a common flue portion downstream thereof for mixing the gases together, and means for rotating the heated gas to form an

envelope during the flow thereof through the annular space so that the treated gas is isolated thereby from said tube until



heated by mixture with the heated gas within the common flue portion to a temperature above the dewpoint thereof.

3,844,741
AIR PURIFIER
Paul Dimitrik, 433 Ridge Crest, Richardson, Tex. 75080
Filed Oct. 11, 1972, Ser. No. 296,572
Int. Cl. B03c *3/04, 3/41, 3/47*
U.S. Cl. 55—102 **8 Claims**



1. An air purifier comprising, a housing having an inlet for receiving air and an outlet for discharging air, an electrostatic precipitator in the housing in the path of air flow from the inlet to the outlet for removing particles from the air, an ultraviolet light in the housing for treating the air passing through the housing, an ozone removing filter in the housing in the path of air flow downstream from the precipitator; wherein the precipitator includes a helical wound wire forming loops, and an electrical power source connected in parallel to a plurality of the loops.

3,844,742
ELECTRODE CLEANING MECHANISM FOR ELECTROSTATIC DUST PRECIPITATOR
Helge Hogh Petersen, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed Feb. 16, 1973, Ser. No. 333,019
Claims priority, application Great Britain, Feb. 18, 1972, 7713/72
Int. Cl. B03c *3/76, 3/45, 3/86*
U.S. Cl. 55—112 **17 Claims**

1. An electrostatic dust precipitator having at least one dust collecting electrode provided with a rapping mechanism for cleaning the electrode which comprises:

a. a first support means for eccentrically mounting said electrode:

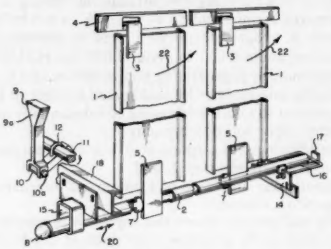
b. an elongated rapping bar associated with said electrode, said rapping bar having an anvil portion at one end thereof;

c. a second support means for mounting said rapping bar in a manner which permits reciprocal axial movement between a rest position and a second position spaced axially from the rest position;

d. means for connecting each electrode to the rapping bar for movement therewith;

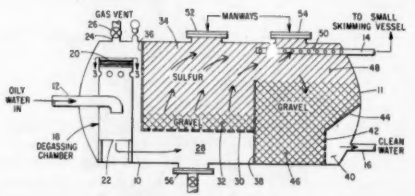
e. a rotatable shaft with means for supporting the shaft perpendicular to said rapping bar; and

f. at least one tumbling hammer adjustably mounted on the rotatable shaft for rotation therewith and in a manner



which provides free pendular pivotal movement relative to said shaft during rotation thereof through an arcuate segment of each revolution thereof, said hammer having a substantially flat impact surface spaced from the center of rotation and the distance from the center of rotation to its point of impact with the anvil portion of the rapping bar is substantially equal to the radius of gyration of the hammer such that when the tumbling hammer strikes the anvil portion of the rapping bar the rapping bar is moved in a generally axial direction from the rest position to the second position to thereby impart a jarring motion to each electrode in a manner which facilitates repeated dislodgement of dust particles collected thereon.

3,844,743
DISPERSED OIL SEPARATOR
Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Filed Aug. 9, 1971, Ser. No. 170,172
Int. Cl. B01d *17/04*
U.S. Cl. 55—174 **8 Claims**



1. An apparatus for removing finely dispersed oil from oily water which comprises:

a horizontal vessel having an inlet end and an outlet end;

an oily water intake at the inlet end of said vessel;

an oil outlet in the outlet end of said vessel near the top thereof;

a water outlet in the outlet end of said vessel near the lower part thereof;

a bed of elemental sulfur particles in said vessel in the flow path between said oily water inlet and said oil outlet and water outlet.

3,844,744

SYSTEM FOR DISCHARGING FLUE GASES

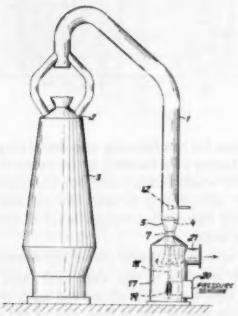
Gerhard Hausberg, Essen-Bredeney, and Karl-Rudolf Hegemann, Essen-Bergerhausen, both of Germany, assignors to Gottfried Bischoff Bau Kompl. Gasreinigungsund Wasserruckkuhlanlagen Kommanditgesellschaft, Essen, Germany

Filed Mar. 16, 1972, Ser. No. 235,208

Claims priority, application Germany, Mar. 16, 1971, 2112541; May 11, 1971, 2123338

Int. Cl. B01d *47/06*

U.S. Cl. 55—210 **13 Claims**



1. An apparatus for depressurizing high-pressure waste gases, comprising:

a duct having an inlet connected to a source of waste gases to be depressurized, said duct terminating in a nozzle with a first section converging toward an outlet formed by an outwardly flared skirt and a elongated second section of substantially constant cross-section between said first section and said outlet;

an insert received with all-around clearance in said nozzle, said insert having a tapering portion with a wider upstream end and a narrower downstream end defining with said first section a regulating gap of a width depending upon the relative axial position of said insert and said nozzle, said insert further having an extension of substantially constant width axially adjoining said tapering portion at said narrower down-stream end and defining with said second section a restricted passage exerting upon said gases a throttling effect substantially independent of said axial position; and

control means coupled to said insert for varying said relative axial position.

3,844,745

GAS-PURIFICATION SYSTEM FOR STEEL-MAKING PLANT

Gerhard Hausberg, Essen-Bredeney, and Karl-Rudolf Hegemann, Essen-Bergerhausen, both of Germany, assignors to Gottfried Bischoff Bau Kompl. Gasreinigungsund Wasserruckkuhlanlagen Kommanditgesellschaft, Essen, Germany

Filed Aug. 8, 1973, Ser. No. 386,609

Claims priority, application Germany, Aug. 10, 1972, 2239373

Int. Cl. B01d *47/06*

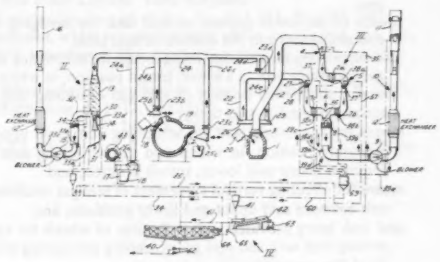
U.S. Cl. 55—213 **10 Claims**

1. A gas-purification system for a steel-making plant including a converter and ancillary equipment giving rise to dust-laden waste gases, comprising:

a main scrubbing station provided with first irrigation means for gases to be purified;

a secondary scrubbing station provided with second irrigation means for gases to be purified;

first duct means connected to said main scrubbing station and positioned to receive waste gases from said converter during operation thereof;



second duct means connected to said secondary scrubbing station and positioned to receive waste gases from said ancillary equipment;

third duct means with an inlet positioned in the vicinity of the converter outlet for intercepting gases evolving during charging of the converter and directing the gases so intercepted to said main scrubbing station; and

valve means for selectively connecting said third duct means to said secondary scrubbing station.

3,844,746

POLLUTION CONTROL APPARATUS

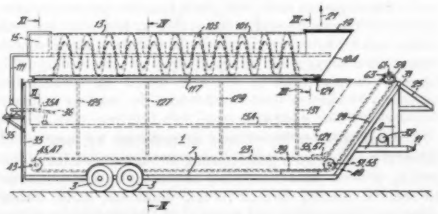
Edward Adam Kutryk, 3131-57 Ave., S.E., Calgary, Alberta, Canada

Filed Mar. 22, 1973, Ser. No. 343,962

Claims priority, application Canada, Jan. 19, 1973, 161682

Int. Cl. B01d *47/06*

U.S. Cl. 55—228 **8 Claims**



1. Apparatus for cleaning contaminated gas, comprising, in combination,

a generally horizontally extending gas scrubbing unit for scrubbing contaminants from the gas;

a generally horzontally extending open topped tank for receiving the scrubbed contaminants from said gas scrubbing unit;

said gas scrubbing unit comprising an inlet at one end of said gas scrubbing unit for the flow of the contaminated gas into said gas scrubbing unit;

means for discharging a spray of liquid through the gas during passage of the gas through said gas scrubbing unit for scrubbing contaminants from the gas;

a first outlet at the opposite end of said gas scrubbing unit for the flow of the scrubbed gas from said gas scrubbing unit; and

a second outlet communicating with said tank for discharging the liquid and scrubbed contaminants from said gas scrubbing unit into said tank;

said tank being dimensioned to accommodate at least a substantial portion of said gas scrubbing unit in said tank; means for supporting said gas scrubbing unit on said tank; and

means in the lower portion of said tank for dredging the contaminants from the bottom of said tank;

said supporting means comprising means for supporting said gas scrubbing unit in a lower, transit position, in which at least a substantial portion of said gas scrubbing unit is accommodated in said tank;

means for supporting said gas scrubbing unit in an upper, operating position, in which said gas scrubbing unit is disposed above said lower, transit position; and

means for effecting vertical movement of said gas scrubbing unit between said upper and lower positions; and

said tank being provided with a plurality of wheels for supporting said tank and said gas scrubbing unit during transit of the apparatus.

3,844,747

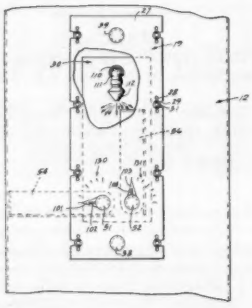
POLLUTION CONTROL DEVICE

Ernest F. Mills, 1245 S. Kendall St., Lakewood, Colo. 80226

Filed May 30, 1972, Ser. No. 257,581

Int. Cl. B01d *47/06*

U.S. Cl. 55—233 **12 Claims**



1. Apparatus for the control of pollution by removal of harmful material from gases passing through a container comprising: a cover plate detachably connected by said container to seal an opening formed in said container; baffle means pivotally supported by said cover plate and movable to a first position such that said baffle means can be removed through said opening in said container with said cover plate and movable to a full extended second position wherein said baffle means cannot be removed through said opening in said container, wherein said container is circular in cross-section and said baffle means comprises a pair of semi-circular baffles and said cover plate rotatably supports a pair of side by side baffle shafts to which said pair of baffles are respectively attached and wherein said baffles in said first position are side by side in said container and provide minimum impedance to gases passing through said container and wherein said baffles in the full extended second position substantially cover said circular cross-sectional area of said container, and wherein said semi-circular baffles comprise hollow frame members covered by screen material.

3,844,748

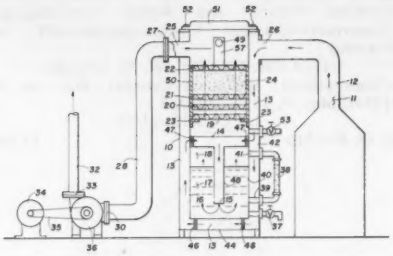
HYDRO-FILTRATION APPARATUS

Theodore Lanier, Bronx, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Dec. 8, 1972, Ser. No. 313,343

Int. Cl. B01d *53/04*

U.S. Cl. 55—255 **1 Claim**



1. Apparatus for the filtering and dissolving of impurities in the exhaust fumes of a furnace or incinerator, comprising

a wash tank which is adaptable for containing a liquid wash solution, with piping to lead the exhaust fumes into the wash tank below the normal level of the wash solution, together with

a filtering screen mounted above the normal liquid level of the wash solution in the wash tank, and mounted to the housing which projects above the wash tank so as to filter all exhaust fumes which flow out of the wash tank, and

a bed of charcoal supported on said filtering screen and supported by the said housing so as to filter all exhaust fumes which have flowed through said filter screen, together with piping connected to the housing above the location of the top of the charcoal bed, which piping leads to

an exhaust blower driven by a motor which draws the exhaust fumes through the apparatus and exhausts the washed and cleaned exhaust fumes to an exhaust duct,

with the filteration section of the apparatus, comprising the filtering screens and the charcoal bed, fastened together inside the said housing such that the filtration section may be removed from the housing for cleaning and replacement purposes, in which two or more filtering screens are mounted below the intake section of the charcoal bed and between the charcoal bed and the wash tank, and in which a filtering screen is mounted above the exhaust section of the charcoal bed so as to retain the charcoal from being drawn into the exhaust blower intake piping, in which

the sides and bottom of the wash tank are surrounded by the hollow intake section of the apparatus, with said intake section connected by ducting to the exhaust flue of the furnace or incinerator and to the piping which leads the exhaust fumes into the wash tank, so that the wash solution contained in the wash tank is heated by the incoming exhaust fumes for the purpose of increasing the ability of the wash solution to dissolve, and retain in solution, chemicals contained in the incoming exhaust fumes.

3,844,749

HIGH VELOCITY FILTER

William E. Carter, Sr., Piedmont, S.C., assignor to Thermo-Kinetics, Inc., Greenville, S.C.

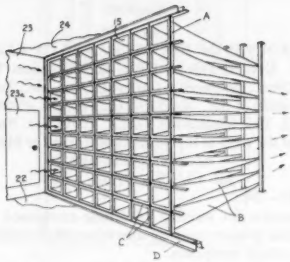
Filed June 1, 1972, Ser. No. 258,484

Int. Cl. B01d *46/04*

U.S. Cl. 55—341 **4 Claims**

1. In a high velocity air handling assembly as for conditioning air in industrial plants which permits entry by service

personnel within the assembly having an insulated housing carried by a structural base, a filter section comprising: a transverse grid formed by intersecting flat longitudinal metallic structural members defining a plurality of intersecting rows of aligned closely adjacent openings, said openings having inner sides conforming generally to the configuration of an opening of a sock filter; said structural members defining longitudinal vertical and longitudinal horizontal flanges; a plurality of elongated sock filters having an open base on one



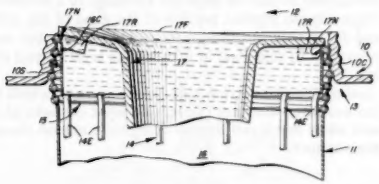
end tapering inwardly therefrom toward and being closed on the other end; sealing strip means carried by said metallic structural members about said inner sides for attaching individual base portions of said sock filters entirely about the base, entirely about said sides so that the bases of said sock filters are open for receiving high velocity air; and structural means securing said grid about marginal portions thereof across said housing and said base so that said grid serves as lateral bracing for said housing and as a support for said sock filters.

3,844,750

DUST COLLECTOR BAG MOUNTING ARRANGEMENT

Frank M. Ray, Hoffman Estates, Ill., assignor to Flex-Kleen Corporation, Chicago, Ill.

Filed Mar. 28, 1973, Ser. No. 345,651
Int. Cl. B01d *46/04*
U.S. Cl. 55—379 **20 Claims**



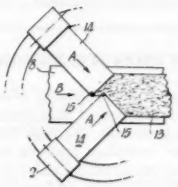
1. In a dust collector that includes a tube sheet having a separate mounting opening for each dust collector bag unit, each bag unit including a bag cage having one end portion terminating in an axial outlet and a bag having an open end sleeve portion closely surrounding said end portion of the cage, an improved bag mounting arrangement wherein said tube sheet carries a collar bordering said mounting opening, said collar having an internal surface leading from said tube sheet and defining an internal helical thread, wherein said cage carries helical thread means secured externally around said end portion thereof for threaded cooperation with the internal helical thread of the collar to support said cage, said cage has a main length portion of smaller diameter than helical thread means, and wherein said bag is of a size to fit in snug relation over said helical thread means to extend in air-tight relation between said internal helical thread and said helical thread means, and to extend in slack relation over the main length portion of the cage.

3,844,751

METHOD AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF A WEB OR MAT OF STAPLE FIBRES

David Samuel Stewart, Fixby, England, assignor to Regina Glass Fibre Limited, York, England

Continuation-in-part of Ser. No. 212,777, Dec. 27, 1971, abandoned, which is a continuation of Ser. No. 11,168, Feb. 13, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 327,942
Claims priority, application Great Britain, Feb. 18, 1969, 8695/69; Aug. 4, 1972, 36520/72
Int. Cl. C03b *37/02*
U.S. Cl. 65—4 **8 Claims**



1. Improved apparatus for producing a web, tissue or mat of discontinuous glass fibres, including:

a. a moving, air pervious conveyor belt;

b. means for supplying continuous glass filaments which is located beside said conveyor belt and which comprises a laterally extending row of molten glass filament forming elements;

c. means for continuously drawing out and solidifying said glass filaments and for breaking them into discontinuous fibres of varying staple lengths;

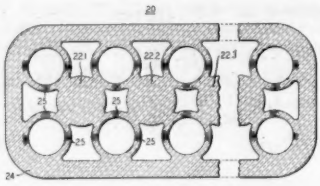
d. means for providing a continuous air current from said filament breaking means to a region above said conveyor belt and for entraining said fibres in said air current in a flow path along a main axis of feed;

the improvement comprising the provision of a pair of stationary hood means, each hood means defining at least the top and sides of said flow path and serving to guide said air current and entrained fibres over and down on to said conveyor belt, in a stationary strip-like deposit area extending over said belt at an oblique angle to its line of movement and wherein the width of the web formed by depositing said fibres on said conveyor belt exceeds the length of a row of said filament forming elements, said pair of hood means being disposed on opposite sides of said conveyor belt, and delivering said fibres over their respective deposit areas which at least partially overlap each other towards the center of said conveyor belt, the density of deposited glass fibres diminishing at the two ends of the longest dimension of said deposit area, but the aggregate density of said deposited fibres in the middle region of said belt being not significantly diminished, by virture of said overlap, and in which one hood means of the pair of said hood means is staggered in relation to the other of such pair on the opposite side of said conveyor belt, and in which both such hood means are adjustably mounted to enable the angular relationship of their main axis of feed to be changed in relation to the line of movement of said conveyor belt when said hood means are not being used, each such hood means being adjustably mounted so that its main axis of feed can be slewed in a horizontal plane about a vertical axis which passes, in plan view, through a region within and close to the inner corner of said hood means and a region at or close to the center line of said conveyor belt, whereby the width of the web deposited may be varied without destroying said overlap between opposing staggered deposit areas.

3,844,752
METHOD FOR FABRICATING AN OPTICAL FIBER CABLE

Peter Kaiser, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 20, 1973, Ser. No. 389,481
Int. Cl. C03c 23/20; G02b 5/14
U.S. Cl. 65—4 6 Claims



1. The method of making an optical cable which comprises the steps of:

a. placing an array of a first plurality of substantially identical transparent solid optical fiber preforms and a second plurality of substantially identical hollow optical fiber preforms in an enclosure preform, each of said solid preforms being contacted by some of said hollow preforms and each of the solid preforms being of essentially the same optical fiber preform material as the material of the hollow preforms in their neighborhoods contacting it, to form a preform assembly of the enclosure preform and of the fiber preforms in a predetermined geometric cross-sectional pattern relationship;

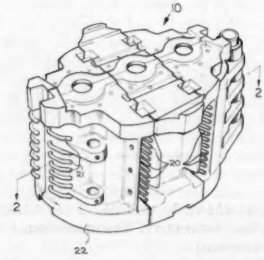
b. heating the preform assembly to a predetermined temperature suitable for drawing the assembly longitudinally to increase the length of the fibers; and

c. longitudinally drawing the preform assembly to a predetermined length, whereby each solid preform provides a core for optical waveguide propagation.

3,844,753
GLASS MOLD WITH METALLIC COOLING STUDS

Robert J. Huebner, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 14, 1973, Ser. No. 332,464
Int. Cl. C03b 5/00, 9/38
U.S. Cl. 65—17 5 Claims



1. A method of producing a glass mold having metal cooling studs inserted therein comprising the steps of: rough boring a series of stud receiving holes in selected regions of the mold from an outside surface inwardly to a point in close proximity to the inner surface of said mold, inserting the annealed end of a partially heat treated hard tempered metal stud into each hole, each of said studs having a diameter less than that of its respective hole and a length substantially greater than the depth of its respective hole so that the hard tempered end of said stud extends beyond the immediately adjacent mold surface, and hammering against the protruding end of each stud until the annealed end of the stud is expanded laterally into tight conforming engagement with the walls of its respective hole.

3,844,754
PROCESS OF ION EXCHANGE OF GLASS

Everett F. Grubb, Toledo, Ohio, and Augustus W. La Due, Avon, Conn., assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 529,215, Feb. 23, 1966, Pat. No. 3,498,773. This application Feb. 4, 1970, Ser. No. 8,707The portion of the term of this patent subsequent to Mar. 3, 1987, has been disclaimed.
Int. Cl. C03c 21/00, 17/00
U.S. Cl. 65—30 5 Claims

1. A process for treating an article composed of an inorganic silicate glass containing ions of an alkali metal expressed as oxide, which comprises:

1. applying to the glass article a mixture of an inorganic salt of a different alkali metal and water, or an organic liquid or mixture thereof, forming on at least an area of a surface of said glass article a substantially continuous layer of material consisting essentially of at least 90 percent by weight of a salt of a different alkali metal, said alkali metal oxide in said glass at least in a surface layer at said area being present in said glass in at least about 5 percent by weight expressed as soda mole equivalent, said alkali metal oxide in said glass being soda and wherein the alkali metal salt of the layer formed on the glass at said area contains potassium carbonate in a molar ratio of potassium carbonate to the total of any other potassium salt present in the layer in at least 1:5;

2. maintaining said surface area of glass and said layer of material at an elevated temperature at least about 200°C but below the strain point of the glass and at atmospheric pressure and for a period of time between a few seconds and about 24 hours, only for some of said alkali metal of the glass in the surface layer of the glass to exchange with said different alkali metal to provide a compressive stress surface layer in the glass article in said layer but for a time insufficient to provide such ion exchange to a substantial degree in the interior portion of the glass of the article and for a time insufficient to provide substantial stress relaxation of said glass in said surface layer of said area; and

3. cooling the glass article to a temperature at which said ion exchange does not occur, said layer of material and said alkali metal salt therein being solid at said elevated temperature.

3,844,755
METHOD AND APPARATUS FOR TRANSFER MOLDING GLASS LENSES

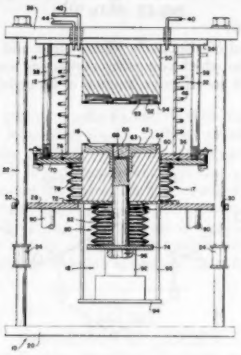
Milton A. Angle, Rochester; George L. Bender, Fairport; Gerald E. Blair, Pittsford, and Clarence C. Maier, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,254
Int. Cl. C03b , 7/00, 9/14
U.S. Cl. 65—32 17 Claims

1. A method of molding glass comprising the steps of:

providing surfaces of glasslike carbon, the glasslike carbon being a form of carbon which has been prepared by the thermal degradation of an organic polymer, which is

substantially chemically inert with heated glass, and which is isotropic, and the surfaces defining a transfer chamber and at least one mold cavity and the surfaces further defining at least one sprue connecting the transfer chamber and the mold cavity;

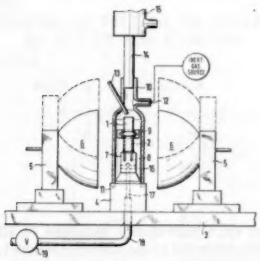


placing glass within the transfer chamber;
heat softening the glass; and
applying pressure to the heat softened glass until the glass is transferred from the transfer chamber through the sprue into the mold cavity.

3,844,756
METHOD AND APPAPATUS FOR PRODUCING MERCURY SWITCHES

Karl-Heinz Michel, Nuernberg, and Gustav Hahn, Altenfurt, both of Germany, assignors to W. Guenther GmbH, Nurnberg, Germany

Filed July 3, 1972, Ser. No. 268,554
Claims priority, application Germany, July 21, 1971, 2136428
Int. Cl. C03c *27/02*
U.S. Cl. 65—59 **9 Claims**



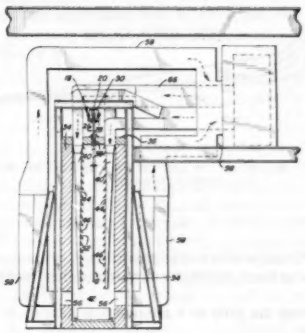
1. A method of making a mercury switch having a mercury-containing closed glass body into which extend at least two electrodes hermetically sealed to the glass body, comprising the following steps:

a. positioning a glass tube open at both ends in an enclosed space;
b. positioning said electrodes through one of the open glass ends;
c. hermetically fusing, by radiating heat, said glass tube at said one end to close the same and to seal in said electrodes;
d. introducing, subsequent to step (c), mercury into said tube through the other of said ends;
e. hermetically fusing, by radiating heat, said glass tube at said other end to close the same; and
f. passing an inert gas through the enclosed space at a rate sufficient to replace the air by the inert gas at least prior to and during step (c) and during step (e) for performing these steps in oxygen-free surroundings; and
g. maintaining the glass tube in the enclosed space continuously through steps (b), (c), (d), (e) and (f).

3,844,757
GLASS SHEET HEATING METHOD

Lawrence L. Kaufman, 1153 Michele Dr., Toledo, Ohio 43615, and Arthur Bienenfeld, 505 N. Lake Shore Dr., Chicago, Ill. 60611

Filed Mar. 5, 1973, Ser. No. 337,952
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **12 Claims**



1. A method of uniformly heating a glass sheet to a desired elevated temperature comprising the steps of: vertically suspending a sheet of glass within a furnace housing, introducing into said furnace housing a large volume of heated flowing gas, confining said gas to flow within said furnace housing in a direction generally parallel to the plane of said suspended glass and on opposite sides thereof to define an operating zone between said confined parallel gas flows, diverting portions of each of said confined parallel gas flows into said operating zone at each of a plurality of locations spaced along the direction of gas flow to form a plurality of high velocity gas streams, directing said gas streams against the opposite surfaces of said glass sheet at an acute angle thereto for a time sufficient to substantially uniformly raise the temperature of said glass sheet to a desired substantially uniform temperature across the surfaces thereof, withdrawing said gas from said furnace at a point downstream of said gas flow, recycling said withdrawn gas into said furnace housing, and heating said recycled gas externally of said furnace housing, sufficiently to maintain the desired temperature thereof.

3,844,758
THERMAL TREATMENT OF GLASS

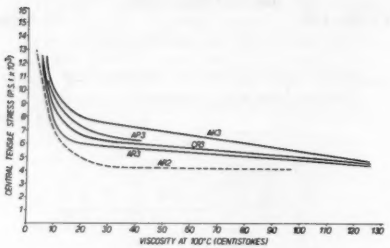
Erwin Wilhelm Wartenberg, Brunnenweisen 6, Riedenberg, Stuttgart, Germany

Filed Feb. 22, 1972, Ser. No. 228,105
Claims priority, application Great Britain, Mar. 1, 1971, 5703/71
Int. Cl. C03b *27/00*
U.S. Cl. 65—116 **10 Claims**

1. A method of thermally treating glass to produce a selected central tensile stress therein which central tensile stress is within a predetermined range at whose upper limit the glass

will exhibit dicing fracture when struck with a sharp object and at whose lower limit the glass will exhibit (1) cracking fracture when struck with a sharp object and (2) dicing fracture upon bending of the glass for example when struck with a blunt object such as a human head, comprising:

a. constituting a body of quenching liquid of a selected family of silicone oils of similar chemical structure the viscosities of whose members at 100°C are distributed over a defined viscosity range the lower end of which defined range is between about 3 centistokes and about 350 centistokes and corresponds to said predetermined range of central tensile stress to be induced in the glass;
b. maintaining the body of quenching liquid at a selected quenching temperature which is not less than about



100°C and is effective to provide heat extraction from the glass surfaces mainly by convection flow within said liquid;

c. heating the glass to a temperature near to its softening point;
d. quenching the hot glass in said body of quenching liquid by immersion therein to cool to said selected quenching temperature by heat extraction from the glass surfaces mainly by convection flow within said liquid; and
e. controlling the viscosity of said quenching liquid at said selected quenching temperature by selection of at least one member of said family of silicone oils to produce said predetermined central tensile stress in the treated glass.

3,844,759

AGGLOMERATION AND EXTRACTION OF PEAT MOSS

Maurice M. J. Ruel, and Aurelio Frederick Sirianni, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 179,746, Sept. 13, 1971, abandoned. This application Dec. 5, 1973, Ser. No. 422,241
Claims priority, application Canada, Sept. 17, 1970, 93387
Int. Cl. C05f *11/02*
U.S. Cl. 71—24 **15 Claims**

1. A method of treating finely divided peat moss which comprises providing a mixture including (a) peat moss particles comprising a hydrophilic matrix and hydrophobic constituents dispersed therein, (b) a first liquid constituting a hydrophobic continuous phase in sufficient amounts to form a fluid slurry with (a), and (c) a second, aqueous, liquid consisting essentially of water which wets said hydrophilic matrix preferentially relative to said first liquid, said second liquid being substantially immiscible with said first liquid and present in an amount between about **130-400%** based on the weight of dry solids, agitating said mixture whereby said first liquid leaches at least part of said hydrophobic constituents and simultaneously said second liquid wets said hydrophilic matrix and agglomerates said leach particles and second aqueous liquid into a multiplicity of substantially discrete pellets, and separating said first liquid containing said hydrophobic constituents from said pellets and at least partially drying said pellets.

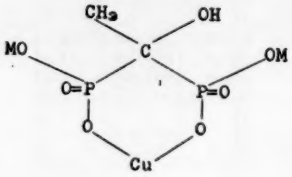
3,844,760

COMPOSITION FOR AND METHOD OF TREATING WATER

George D. Nelson, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 29, 1972, Ser. No. 230,444
Int. Cl. A01n *9/36*
U.S. Cl. 71—67 **4 Claims**

1. A method of effectively killing algae and preventing its growth in water which comprises contacting water containing said algae with an effective amount of an algicide having the formula



wherein M is hydrogen, an alkali metal, alkaline earth metal or ammonium.

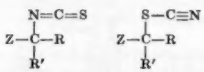
3,844,761

HETEROCYCLIC ALKYLTHIOCYANATE AND ISOTHIOCYANATE PLANT GROWTH REGULATORS

Peter E. Newallis, Leawood, Kans.; Albert J. Poje, Grandview, Mo., and Peter F. Epstein, Prairie Village, Kans., assignors to Chemagro Corporation, Kansas City, Mo.

Division of Ser. No. 91,541, Nov. 20, 1970, Pat. No. 3,725,030. This application Jan. 15, 1973, Ser. No. 323,670
Int. Cl. A01n *5/00*
U.S. Cl. 71—76 **9 Claims**

1. The method of retarding the growth of plants which comprises applying to such plants, a growth retarding amount of a compound of the formula:



Wherein:
R and R′ are each individually hydrogen or alkyl and, Z is thienyl, dihydrothienyl-1 oxide, dihydrothienyl-1, 1-dioxide or tetrahydrothienyl-1-dioxide as well as chloro, bromo, and nitro substitution products thereof, alkyl in all instances containing from 1 to 5 carbon atoms.

3,844,762

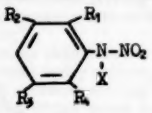
PHENYLNITRAMINE HERBICIDES

Barrington Cross, Rocky Hill, and William Henry Gastrock, Hightstown, both of N.J., assignors to American Cyanamid Company, Stanford, Conn.

Filed May 11, 1971, Ser. No. 142,393
Int. Cl. A01n *9/20*
U.S. Cl. 71—121 **8 Claims**

1. A method for the postemergence control of undesirable broadleaf plant species comprising applying to the foliage of

the plant species a herbicidally effective amount of a phenylnitramine having the formula:



wherein the R groups: R_1, R_2, R_3, and R_4 each represent hydrogen, halogen, loweralkyl C_1–C_4, carboxy or nitro; provided that at least two of the R groups are substituents other than hydrogen; and X is hydrogen, loweralkyl C_1–C_4, loweralkoxyloweralkyl wherein the hydrocarbon portions of the group are both in the range of C_1–C_4, arloweralkyl wherein the loweralkyl portion of the group is in the range of C_1–C_4, alkali metals, alkaline earth metals, or the N-ammonium derivatives; provided that where an R group is carboxy, X is hydrogen.

3,844,763

DEPOSITION OF COPPER

Alfred Richard Burkin, Shenfield, England, assignor to National Research Development Corporation, London, England

Filed Aug. 20, 1971, Ser. No. 173,650

Claims priority, application Great Britain, Aug. 28, 1970, 41659/70

Int. Cl. C22b 3/00

U.S. Cl. 75—0.5 A **11 Claims**

1. Process for precipitating copper comprising contacting with a reducing gas a liquid organic medium containing a copper species in a compound of or in a complex with at least one tertiary carboxylic acid having at least 5 carbon atoms to cause precipitation of copper from said organic phase, there being present during said precipitation a base in solution in said organic medium.

3,844,764

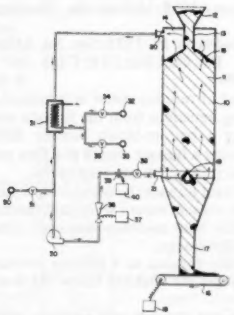
PROCESS FOR THE CONTINUOUS PASSIVATION OF SPONGE IRON PARTICLES

Donald Beggs, Toledo, Ohio, assignor to Medrex Corporation, Toledo, Ohio

Filed Dec. 26, 1973, Ser. No. 428,147

Int. Cl. C23f 7/04; C21b 1/00

U.S. Cl. 75—.5 R **3 Claims**



1. A process for passivating active sponge iron particles comprising:

maintaining a continuously gravitationally descending column of sponge iron particles within a vertically oriented housing;

continuously recirculating a gaseous medium through the descending column in counterflow relationship to the descending particles;

maintaining a predetermined temperature of introduction of the gaseous medium to the column of at least 125°F to thereby heat said particles to said temperature;

adding oxygen to the gaseous medium at a predetermined rate of at least 0.004 standard cubic feet of oxygen per pound of sponge iron being passivated; and

maintaining a predetermined flow rate of the recirculating gaseous medium in the column.

3,844,765

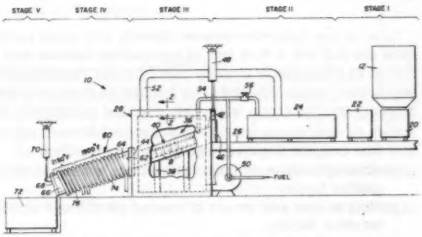
DIRECT REDUCTION METHOD USING INDUCTIVE HEATING

Jesse J. Baum, 10419 Kelso Dr., Sun City, Calif. 92381

Division of Ser. No. 119,456, March 1, 1971, Pat. No. 3,740,042. This application Mar. 6, 1973, Ser. No. 338,466

Int. Cl. C22d 7/04

U.S. Cl. 75—10 R **8 Claims**



1. A direct reduction process comprising the steps of

providing metal ore concentrate in finely divided form, said metal being selected from the group consisting of iron, copper, manganese and chromium,

intermixing at least one of said ore concentrates intimately with a finely divided thermosetting reductant-binder and six percent moisture,

pressing the intermixture of ore concentrate, moisture, reductant-binder and carbon into hard and dense briquettes having dimensions of at least two or more inches in diameter and two or more inches in height,

heating said briquettes to a temperature range of from 300°F to 525°F thereby driving off moisture and volatile material from said briquettes and caramelizing the reductant-binder to form a tough, hard briquette of sufficient strength to be handled by conventional means,

inserting said briquettes into a said first inclined tube,

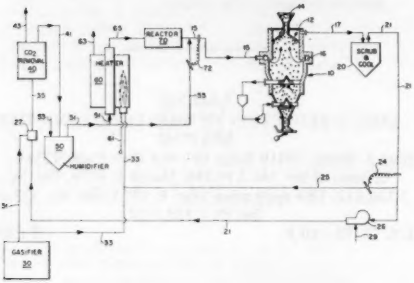
heating said briquettes within said tube in the absence of oxygen to a temperature of about 1,800°F thereby causing the caramelized carbonaceous reductant-binding to react with the oxide ore concentrate to reduce substantially all of the latter to free metal in finely divided form and to agglomerate the finely divided free metal particles into a briquette whose size has been substantially diminished to up to fifty percent of its former volume, said briquette having low porosity, high density and highly improved electrical conductivity, and

inserting or transferring said briquettes of diminished size directly while hot into a second tube and heating the same by means of an electric induction coil to a temperature ranging from either 1,900°F to 2,150°F or 2,350°F to 2,750°F.

3,844,766
PROCESS FOR REDUCING IRON OXIDE TO METALLIC SPONGE IRON WITH LIQUID OR SOLID FUELS

Donald Beggs, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 26, 1973, Ser. No. 427,541
Int. Cl. C21b *13/02*
U.S. Cl. 75—35 **8 Claims**



1. In an ore reduction process wherein iron oxide particulates are fed into a first end of a reduction furnace and removed as substantially metallic iron from the opposite end of said furnace and a reducing gas is introduced at an inlet in said furnace removed from said first end and withdrawn as a stream of reacted gas from an outlet in said furnace adjacent said first end, the improvement comprising the steps of:

producing a stream of reducing-type gas in a liquid or solid gasifier facility;

passing at least said stream of reacted gas through a cooler-scrubber facility;

passing said stream of reducing-type gas and said stream of cooled and cleansed reacted gas through a CO_2 removal facility to produce a gas mixture composed principally of reductants defined as CO and H_2 with residual amounts of oxidants defined as H_2O and CO_2, said H_2O predominating over said CO_2;

heating said gas mixture to a predetermined temperature to react a portion of said CO reductants with a portion of said H_2O oxidants to produce a predetermined quantity of H_2 and CO_2 which transforms said gas mixture into a reducing gas having predetermined compositions of H_2, CO, H_2O and CO_2; and

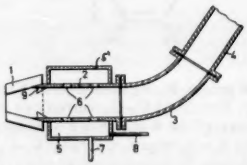
transferring said reducing gas to said inlet of said furnace.

3,844,767
METHOD OF OPERATING A BLAST FURNACE

Paul Rheinlander, Wilhelm-Busch-Strasse 9, Wolfenbuttel, Germany

Filed Feb. 12, 1973, Ser. No. 331,862
Claims priority, application Germany, Feb. 12, 1972, 2206692; Dec. 27, 1972, 2263661
Int. Cl. C21b *5/02*
U.S. Cl. 75—42 **17 Claims**

1. In a method of operating a blastfurnace with coke as the principal fuel and with a carbon- or hydrocarbon-containing auxiliary fuel, such as petroleum, petroleum products, natural gas, coke oven gas or coal dust, wherein the coke, in conventional manner, is charged through the top of the furnace while the auxiliary fuel is heated and broken down in a reaction space located outside the hearth of the furnace and the decomposition products of the auxiliary fuel thus obtained are introduced into the hearth through tuyere means, the hot blast for the operation of the furnace being carried by blow pipe means adjacent to and communicating with said tuyere means and being introduced into the furnace through said tuyere means, the improvement which comprises that said auxiliary fuel is decomposed and incompletely burnt in said reaction space and the incompletely burnt decomposition products



thus formed are directly introduced into said blow pipe means or said tuyere means as an auxiliary flow just prior to the discharge of said hot blast into the furnace through said tuyere means.

3,844,768
PROCESS FOR REFINING ALLOY STEELS CONTAINING CHROMIUM AND INCLUDING STAINLESS STEELS

Pierre Leroy, Saint-Germain-En-Laye; Michel Cadart, St-Etienne; Jean Georges Morlet, Nevers, and Jean Saleil, Imphy, all of France, assignors to Creusot-Loire, Paris, France

Filed Apr. 25, 1972, Ser. No. 247,315
Claims priority, application France, May 28, 1971, 71.19463; July 23, 1971, 71.27015; July 23, 1971, 71.27016; Feb. 29, 1972, 72.06824
Int. Cl. C21c *5/34, 7/10*
U.S. Cl. 75—59 **21 Claims**

1. A process for refining an alloy steel containing chromium, which comprises blowing fluids into the molten steel through at least one feed tuyere, each tuyere providing a first flow of an oxidising fluid, a second flow of a fluid for diluting the carbon monoxide in the bath, and a third peripheral flow, which is physically distinct and separate from the said first and second flows in the tuyere, of a hydro-carbon containing liquid, said third flow remaining in the liquid state until after leaving the tuyere.

3,844,769
METHOD OF CONTROLLING EMISSIONS FROM FURNACES

Albert Calderon, 1065 Melrose Dr., Bowling Green, Ohio 43402

Filed Apr. 10, 1972, Ser. No. 242,647
Int. Cl. C21c *5/28;* **C21b** *7/08*
U.S. Cl. 75—60 **4 Claims**

1. A method of refining metal in a bottom-blown furnace and controlling emissions from the furnace comprising:

a. providing a bottom-blown furnace defining a charge cavity having a furnace mouth and flow passages through which gas is directed into said cavity;

b. charging said furnace by introducing a molten metal into the cavity via said mouth when said furnace is in a charging position with said flow passages above the level of metal in the cavity;

c. moving said furnace to a refining position wherein said flow passages are disposed below the level of the molten charge;

d. directing gas through said passages while moving said furnace;

e. providing an emission receiving hood comprising a tubular hood body having an emission receiving opening therein;

f. aligning said hood opening with said furnace mouth after said furnace is charged;

g. moving said hood body while moving said furnace to maintain said emission receiving opening adjacent and aligned with said furnace mouth;
h. maintaining said emission receiving opening aligned with an adjacent said furnace mouth while said furnace is in its refining position;
i. moving said furnace away from the refining position to a tapping or a sample taking position; and,
j. maintaining said emission receiving opening aligned with and adjacent said furnace mouth while moving said furnace from said refining position.

3,844,770

MANUFACTURE OF STEEL AND FERROUS ALLOYS

Ivor Gray Nixon, 1st Stock Links, "Matterhorngruss", Zermatt, Valais, Switzerland

Continuation-in-part of Ser. No. 181,360, Sept. 17, 1971, abandoned. This application May 9, 1973, Ser. No. 358,664
Int. Cl. C21c *5/28*
U.S. Cl. 75—60 **20 Claims**

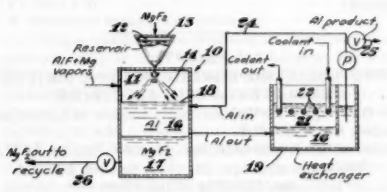
1. Method for the production of steel or a ferrous alloy in a converter comprising the steps of:
i. charging metallic iron feedstock containing minor amounts of non-ferrous elements to said converter to provide a pool of molten metal in said converter;
ii. refining said molten metal by blowing it with a decarburizing feed gas said decarburizing feed gas being such that a decarburizing gas mixture is generated which on leaving said converter is reducing to wustite at the temperature at which said converter is operated;
iii. recovering said gas generated in said converter by means of a gas conduit connected to said converter by means of a gas-tight joint which does not permit appreciable ingress of atmospheric air into or egress of gas from said joint;
iv. introducing a quench stream to reduce the temperature of gases leaving said converter;
v. tapping steel or ferrous alloy and slag in molten from from said converter; and
vi. operating said converter as a closed system in which said blowing with decarburizing feed gas, said charging with iron feedstock, said recovery of gas generated in said converter and said tapping of steel or ferrous alloy and slag from said converter are effected without opening of said converter to the atmosphere.

3,844,771

METHOD FOR CONDENSING METAL VAPOR MIXTURES

Gilbert S. Layne; Leigh B. Bangs, and James O. Huml, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 6, 1970, Ser. No. 909
Int. Cl. C22b *21/00*
U.S. Cl. 75—68 B **15 Claims**



1. A process which comprises
1. intimately mixing in a condensation zone a mixture comprising AlX + M vapors, wherein X is fluorine or chlorine and M is an alkali metal or alkaline earth metal, with a liquid condensing medium, consisting of a condensation product of such vapor, at a temperature lower than the condensation temperature of the vapors to produce a liquid condensate comprising a liquid aluminum phase and a liquid MX_n phase, wherein a is the normal valence of M, said condensate being at a temperature T_1,
2. coalescing the liquid aluminum and MX_n phases to provide separate liquid layers of each,
3. cooling a portion of the coalesced liquid condensate produced in Step 2 above to a temperature of T_2
4. returning the cooled condensate to the condensation zone as the condensation medium in Step 1 above, said temperature T_2 being above the solidus temperature of the cooled condensate and at least about 50°C. below T_1.

3,844,772

DEOXIDATION OF COPPER

James Leonard Sherman, Woodstown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1973, Ser. No. 336,764
Int. Cl. C22b *15/00*
U.S. Cl. 75—76 **6 Claims**

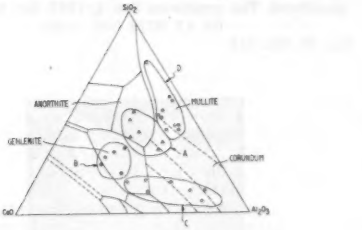
1. A method for the deoxidation of molten copper which comprises introducing a member selected from the group consisting of liquid methanol and methanol vapor as a reducing agent to the copper melt.

3,844,773

FREE CUTTING STEEL CONTAINING MULLITE

Noboru Yamakoshi, Kobe; Tsugio Kaneda, Akashi; Yoshichica Yanagi; Kiichi Narita, and Tatsu Fujita, Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed May 10, 1973, Ser. No. 359,024
Claims priority, application Japan, May 10, 1972, 47-46141
Int. Cl. C22c *37/00*
U.S. Cl. 75—123 G **3 Claims**



1. A free cutting steel which contains 0.10 to 0.60 percent carbon, 0.50 to 0.40 percent silicon, 0.04 to 0.15 percent sulphur, and is calcium deoxygenated by the addition of 5 to 15 ppm calcium which forms non-metallic inclusions of a composition consisting essentially of the mullite region of a three phase trigonometric diagram of the $CaO—Al_2O_3—SiO_2$ system, whereby said free cutting steel exhibits superior cutting properties because of the presence of said nonmetallic inclusions, said calcium and said sulfur therein.

3,844,774

CORROSION-RESISTANT ALLOYS

John H. Culling, Kirkwood, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.

Filed Sept. 24, 1973, Ser. No. 399,687
Int. Cl. C22c *31/00*
U.S. Cl. 75—134 F **4 Claims**

1. A corrosion-resistant alloy consisting essentially of between about 35.2 and about 46.2 percent by weight nickel,

between about 14.9 and about 25.3 percent by weight chromium, between about 6.7 and about 14.5 percent by weight molybdenum, between about 4.3 and about 8.1 percent by weight copper, between about 14.06 and about 30.62 percent by weight iron, up to about 0.11 percent by weight carbon, up to about 1.00 percent by weight silicon, up to about 1.50 percent by weight manganese, up to about 0.010 percent by weight boron, up to about 1.00 percent by weight niobium, up to about 2.00 percent by weight tantalum, and up to about 1.00 percent weight titanium, the sum of the molybdenum content and the copper content being at least about 11.7 percent by weight and the sum of the niobium content and one-half of the tantalum content being no greater than about 1.00 percent by weight.

3,844,775

POLYNARY GERMANIDES AND SILICIDES

Alfred E. Austin, Worthington, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1972, Ser. No. 309,450
Int. Cl. C22c *31/00*
U.S. Cl. 75—134 F **14 Claims**

1. A composition of the formula

$$Mn_{1-} \quad (Co_{1-y}Ni_y)_{1-} \quad Si_zGe_{1-z}$$

wherein

y is 0 to 1.0

z is 0 to 0.6 and

$\alpha + \beta$ is 0 to 0.1

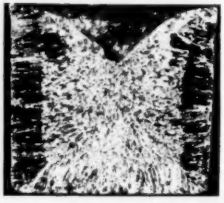
having orthorhombic crystal structure at 270°K and transforming with accompanying volume decrease to hexagonal crystal structure at a temperature above 270°K and up to about 1,000°K.

3,844,776

METHOD OF CASTING INOCULATED METALS

Gustaf F. Bolling, and Gerald S. Cole, both of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 833,446, June 16, 1969, abandoned. This application Feb. 1, 1973, Ser. No. 328,800
Int. Cl. B22d *1/00, 21/00*
U.S. Cl. 75—135 **16 Claims**



1. A method of selectively controlling the solidification structure of a metal object, comprising:

a. adding an inoculant to a molten metal preparation, the inoculant being comprised of material effective to form a group of atoms about which the molten metal nucleates during solidification,

b. subjecting the molten metal during solidification to at least one sequence comprising each of the following inertial effects in either order: a plurality of angular accelerations each at least sufficient to create a new laminar boundary layer in order to produce a columnar solidification structure in that portion of the object solidified during said accelerations, and a substantially uniform rotation predominantly devoid of velocity gradients and angular acceleration to produce an equiaxed solidification structure in that portio of the object solidified during said uniform rotation.

3,844,777

FILLER ALLOYS FOR FLUXLESS BRAZING ALUMINUM AND ALUMINUM ALLOYS

William J. Werner, Clinton, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 4, 1972, Ser. No. 295,080
Int. Cl. C22c *21/00*
U.S. Cl. 75—138 **1 Claim**

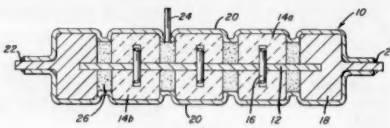
1. A fluxless brazing alloy for vacuum brazing aluminum or aluminum alloy parts consisting essentially of 1–10 percent yttrium, 15–30 percent germanium and the balance aluminum, said alloy having a melting point in the range above 424°C. and up to 615°C.

3,844,778

METHOD FOR PRODUCING GROOVED ALLOY STRUCTURES

Raymond F. Malone, Beaver, Pa., and Linus M. Raring, Glastonbury, Conn., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Apr. 12, 1973, Ser. No. 350,423
Int. Cl. B22f *1/00*
U.S. Cl. 75—208 R **13 Claims**



1. A method for producing an alloy structure having a deep surface groove formed by the bonding of alloy powder to at least one fully dense alloy member, said method comprising placing adjacent said fully dense member at least one nondeformable mandrel having a configuration and orientation conforming to said deep surface groove desired on said structure, placing said alloy powder adjacent said mandrel and adjacent said fully dense member, sealing said fully dense member, said mandrel and said alloy powder in a deformable envelope to form an assembly that is sealed against the atmosphere, heating said assembly to an elevated temperature, hot isostatically compacting said assembly by the application of fluid pressure sufficient to deform said envelope and compress said alloy powder against said nondeformable mandrel and said fully dense member to compact said alloy powder to substantially full density and produce a metallurgical bond between said fully dense powder and said fully dense member without deforming said mandrel and upon completion of said compacting removing said nondeformable mandrel from said assembly to expose said surface groove on the resulting alloy structure.

3,844,779

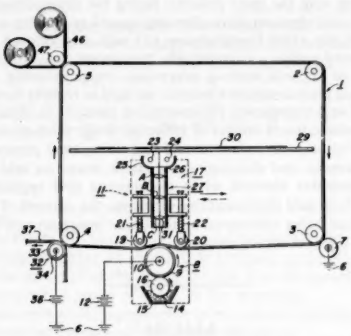
PHOTOELECTROPHORETIC IMAGING METHOD EMPLOYING A BELT ELECTRODE

John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 884,428, Dec. 12, 1968, Pat. No. 3,697,409. This application Apr. 28, 1972, Ser. No. 248,764
Int. Cl. G03g *17/00, 15/00*
U.S. Cl. 96—1 PE **6 Claims**

1. In a photoelectrophoretic imaging method with apparatus comprising a transparent flexible, closed, endless belt loop electrode having a planar segment with photoelectrophoretic imaging suspension on the outer surface thereof, a roller electrode positioned against the outer surface of said loop

electrode at said planar segment to form a nip, exposure means located inside said loop electrode for exposing said original and said photoelectrophoretic imaging suspension



located in said nip to a light image, comprising the steps of:

a. projecting an image of activating electromagnetic radiation from within said loop electrode through said loop electrode to said nip;

b. advancing said roller electrode and thus said nip along said planar segment while it is being held stationary to thereby expose photoelectrophoretic imaging suspension coated on the outside of said loop electrode at said planar segment and at said nip formed by said loop and roller electrodes while applying an electrical field across said nip to form an image from the photoelectrophoretic imaging suspension; and

c. advancing said loop electrode with the photoelectrophoretic image on the outside thereof after steps (a) and (b) to

i. contact said image to a transfer member for transfer of the image from said loop electrode to said transfer member;

ii. contact said loop electrode portions after transfer of said image with a cleaning means positioned outside of said loop electrode for cleaning the outside surface of said loop electrode; and

iii. provide a new, clean planar segment portion for formation of another image.

3,844,780

IMAGING PROCESS

Kyler F. Nelson, Pittsford, and Gedemainas J. Reinis, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 28, 1972, Ser. No. 310,041
Int. Cl. G03g *5/06*
U.S. Cl. 96—1 M **13 Claims**

1. A method of imaging comprising;

a. providing a manifold set comprising an electrically photosensitive imaging layer sandwiched between the donor sheet and a receiver sheet said layer being structurally fracturable in response to the combined effect of an applied electrical field and exposure to electromagnetic radiation to which said layer is sensitive;

b. subjecting said imaging layer to a first electrical field;

c. modifying said first electrical field wherein said modification involves reversing the potential across said manifold set;

d. subsequent to said modification, substantially restoring said first electrical field across said manifold set;

e. while said imaging layer is subjected to said restored electrical field exposing said imaging layer to a pattern of actinic electromagnetic radiation, and;

f. separating said receiver sheet from said donor sheet whereby said imaging layer fractures in imagewise configuration forming a positive image on one of the donor and receiver sheets and a negative image on the other said sheet.

3,844,781

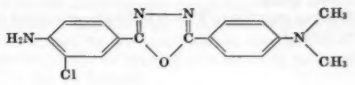
ORGANIC PHOTOCONDUCTIVE MATERIALS

Kaichi Tsuchiya, and Nagashima Shinichiro, both of Tokyo, Japan, assignors to Canon, Inc., Tokyo, Japan

Division of Ser. No. 888,886, Dec. 29, 1969, Pat. No. 3,721,554. This application Jan. 22, 1973, Ser. No. 325,258
Claims priority, application Japan, Dec. 30, 1968, 43-69504
Int. Cl. G03g *5/06, 5/08*
U.S. Cl. 96—1.5 **3 Claims**

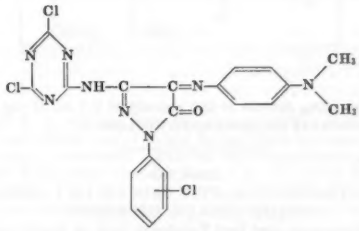
1. A light transparent photoconductive material for use in electrophotography which is the reaction product obtained by condensing

a. the organic photoconductive compound of the formula



and

b. the colored substance of the formula

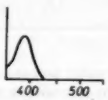


3,844,782

HETEROCYCLIC DYE SENSITISED ELECTROPHOTOGRAPHIC MATERIAL

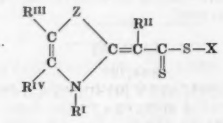
Oskar Riester, Leverkusen, and Wolf Gesierich, Opladen-Grosserdriesch, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 34,626, May 4, 1970, abandoned, which is a continuation of Ser. No. 571,244, Aug. 9, 1966, abandoned. This application Aug. 9, 1972, Ser. No. 279,251
Claims priority, application Germany, Oct. 15, 1965, 50509
Int. Cl. G03g *5/08, 5/00, 7/00*
U.S. Cl. 96—1.7 **3 Claims**

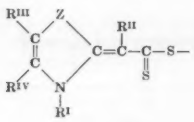


1. Photosensitive electrophotographic material having a layer of photoconductive material comprised of zinc oxide

sensitized by a methylene dithiocarboxylic acid ester of a heterocyclic compound dye of the formula:



wherein Z is a sulphur or selenium atom or a $C(R)_2$ group; R^I is (1) an alkyl group having up to 6 carbon atoms, (2) a sulfoalkyl radical selected from the group consisting or $(CH_2)_3SO^-_3$ + $(CH_2)_4SO^-_3$, or (3) a carboxyalkyl radical selected from the group consisting of $(CH_2)_2COOH$+CH_2COOH;
R^{II} is hydrogen;
R^{III} and R^{IV} are each hydrogen, a methyl group or together form a benzene ring;
R is a methyl group;
X has the same meaning as R^I or is hydrogen or a group of the following formula:



said dye being present in the amount of 0.1 to 10 mg. per square meter of the photoconductive layer.

3,844,783

ELECTROPHOTOGRAPHIC PROCESS INCLUDING A COLOR MASKING OPERATION

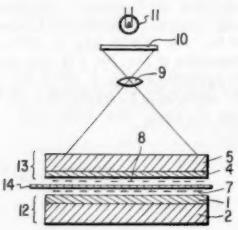
Seiji Matsumoto, and Isoji Takahashi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1971, Ser. No. 213,136

Claims priority, application Japan, Dec. 28, 1970, 45-120544

Int. Cl. G03g *13/00, 13/06*

U.S. Cl. 96—1.2 **7 Claims**



1. An electrophotographic process including a color masking operation comprising providing a photoconductive insulator as a main photosensitive element and a substantially transparent photoconductive insulator as a transparent photosensitive element, where said main photosensitive element is provided with a grounded conductive support and said transparent photosensitive element is provided with a transparent grounded conductive support and where the spectrum sensitivity region of said transparent photosensitive element is different from the spectrum sensitivity region of said main photosensitive element or said main photosensitive element combined with a colored filter, charging both photosensitive elements with the same polarity, facing the charged surfaces of both said photosensitive elements toward each other so that a slight gap exists therebetween (1) with said colored filter interposed and/or a substantially transparent insulator interposed, or (2) with nothing interposed, image exposing while both said photosensitive elements are held in registry from the side of said transparent photosensitive element to obtain the electrostatic latent images of reflected image relation on said main photosensitive element and said transparent photosensitive element, and developing the latent image on said main photosensitive element while maintaining said registry between both said photosensitive elements, the amount of toner deposited being influenced by the latent image on said transparent photosensitive element.

3,844,784

REVERSAL MULTI-LAYER COLOR PHOTOGRAPHIC MATERIALS

Takeo Shimada; Yukio Yokota, and Jun Hayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 28, 1972, Ser. No. 293,276

Claims priority, application Japan, Sept. 30, 1971, 46-76515

Int. Cl. G03c *1/40, 1/08, 5/50*

U.S. Cl. 96—22 **15 Claims**

1. In a multi-layer reversal color photographic material having on a support a red sensitive silver halide emulsion layer, a green sensitive silver halide emulsion layer, and a blue sensitive silver halide emulsion layer capable of forming after exposure and black and white negative development cyan, yellow, and magenta dyed images respectively by the developments in three color developing solutions containing a diffusible cyan coupler, a diffusible yellow coupler, and a diffusible magenta coupler, respectively, the improvement comprising said red sensitive silver halide emulsion containing a diffusion resistant cyan coupler present in said red sensitive emulsion layer in an amount ranging from 0.005 to 0.5 mol per mol of the silver halide in said red sensitive emulsion layer wherein said blue-sensitive and said green-sensitive layers contain no color couplers after "layer" at the last line.

3,844,785

COLOR PHOTOGRAPHIC DIFFUSION TRANSFER PROCESS AND PHOTOGRAPHIC MATERIAL FOR USE IN THIS PROCESS

Walter Puschel, Leverkusen; Hans Vetter, and Heinrich Odenwalder, both of Cologne, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 12, 1973, Ser. No. 369,307

Claims priority, application Germany, June 10, 1972, 2228361

Int. Cl. G03c *5/54, 7/00, 1/40*

U.S. Cl. 96—29 D **3 Claims**

1. The photographic dye diffusion transfer process comprising the steps of

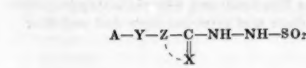
a. imagewise exposing a photographic material having at least one silver halide emulsion layer and uniformly distributed therein or in an hydrophilic colloid layer adjacent thereto a dye-giving compound

b. developing the material to produce therein an imagewise distribution of developer oxidation products

c. reacting said imagewise distribution of developer oxidation products with said dye-giving compound to produce an imagewise distribution of diffusible dye or dye precursor by

either immobilizing the dye-giving compound where said dye-giving compound is diffusible prior to development or splitting the dye-giving compound to liberate a diffusible dye or dye precursor where said dye-giving compound is resistant to diffusion prior to development and

d. transferring the imagewise distribution of diffusible dye or dye precursor to an image-receiving layer, wherein the dye-giving compound is of the following formula:



in which

A represents the group D or E as defined hereinafter;

B represents either an aliphatic or aromatic group when A is the group D or the group D when A is the group E;

D represents a group of a dye or dye precursor;

E represents a photographically inert radical rendering the dye-giving compound resistant to diffusion;

X represents oxygen, sulfur, or an imino group

Y represents a connecting member selected from the group consisting of a chemical bond, —O—, —S—, —NR—, —CO—, —SO_2—, —SO_2NR— and —CONR— wherein R denotes hydrogen or alkyl;

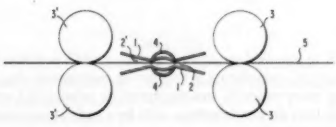
Z represents a chemical bond between Y and the carbon atom to which X is attached, or together with said carbon atom and X a heterocyclic group comprising a 5- or 6-membered heterocyclic ring in which X denotes nitrogen.

3,844,786

PROCESSING PHOTOGRAPHIC MATERIALS

Yoshiteru Ito, and Minoru Sonoda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-shi, Kanagawa, Japan

Filed Feb. 28, 1973, Ser. No. 336,591
Claims priority, application Japan, Mar. 3, 1972, 47-21551
Int. Cl. G03c 5/00
U.S. Cl. 96—35.1 **12 Claims**



1. A process for continuously treating photographic material in web form which comprises:

introducing a flowing bulk stream of processing solution into a horizontally disposed conduit having a diameter (*d*);

flowing the bulk stream of processing solution through said conduit, which conduit is provided with a pair of substantially oppositely disposed slits in the walls thereof, without significant loss of processing solution;

passing the photographic material through one of said substantially oppositely disposed slits in the walls of the conduit which holds the processing solution as a flowing bulk stream;

passing the photographic material at a speed of passage (*v*) through the conduit and thereby through the flowing bulk stream of processing solution in a direction transverse to the direction of flow of the processing solution in said conduit, the conduit diameter (*d*) to photographic material speed of passage through the conduit (*v*) satisfying the formula $v \geq d/5$ in seconds; and

removing the photographic material from the conduit via the other of said substantially oppositely disposed slits, said processing being such that the flowing processing solution is maintained under conditions which substantially exclude air, whereby air oxidation of the processing solution is prevented.

3,844,787

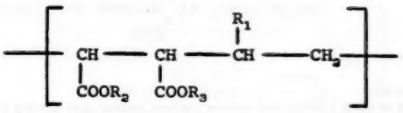
PROCESS OF CHEMICALLY BONDING A DYESTUFF TO A SUBSTRATE

Henri Ulrich, Northford, and Fred A. Stuber, North Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 246,855, April 24, 1972, Pat. No. 3,763,118. This application July 23, 1973, Ser. No. 381,574
Int. Cl. G03c 1/70, 1/52
U.S. Cl. 96—35.1 **4 Claims**

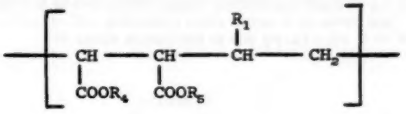
1. A process of chemically bonding a dyestuff selected from the group consisting of acid dyestuffs, basic dyestuffs, direct dyestuffs and mixtures thereof to a substrate containing a plurality of C—H bonds which substrate is not normally receptive to dyestuffs which process comprises:

a. applying to said substrate a radiation-sensitive polymer characterized by the presence, in combination in the same molecule, of each of two recurring units, one of which has the formula:

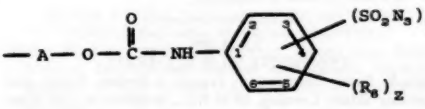


wherein R_1 is selected from the class consisting of lower-alkoxy and phenyl, one of R_2 and R_3 represents hydrogen and the other represents di(lower-alkyl)aminohydrocarbyl wherein hydrocarbyl contains from 1 to 12 carbon atoms inclusive,

and the other of said recurring units is represented by the formula:



where R_1 is as defined above, one of R_4 and R_5 represents hydrogen and the other represents a group of the formula:



wherein A is alkylene having from 2 to 6 carbon atoms separating the valencies and a total carbon atom content of from 2 to 10, R_6 is selected from the class consisting of lower-alkyl and halogen, y is an integer from 1 to 2, z is an integer from 0 to 2, provided that $y + z$ is not greater than 3, and the SO_2N_3

group is in any of positions 3, 4 and 5 in the phenyl nucleus to which it is attached and at least one of the said positions 3, 4 and 5 is unsubstituted;

b. exposing the resulting combination of polymer and substrate to appropriate radiation to activate said photosensitive polymer; and

c. contacting the treated polymer and substrate with said dyestuff.

3,844,788

INCORPORATION OF SULFONYL DERIVATIVES OF ISOTHIOUREA IN LIGHT-SENSITIVE ELEMENTS

Donald M. Burness; Grant M. Haist, both of Rochester, and James R. King, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,314

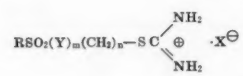
Int. Cl. G03c *5/38, 1/48, 1/06*

U.S. Cl. 96—61 R **22 Claims**

1. A photographic element comprising a support having thereon

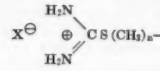
a. a silver halide photographic emulsion and associated therewith

b. a stabilizer precursor which is a sulfonylalkyl or sulfonamidoalkyl isothiuronium compound having the formula:



wherein

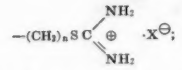
R = alkyl having one to five carbon atoms, aryl having 6 – 12 carbon atoms or



$Y = NR'$ or ZSO_2;

Z = a divalent hydrocarbon radical having one to five carbon atoms or a carbon chain containing —C—O—C—;

$R' = H$, alkyl having one to five carbon atoms or



$m = 0$ or 1;

$n = 2$ or 3 and

X^- is a non-metallic acid anion.

3,844,789

COMPOSITE FILM ELEMENTS

James E. Bates, Binghamton; Francis J. Farren, Vestal, and Jerome Sklute, Corning, all of N.Y., assignors to GAF Corporation, Wayne, N.J.

Continuation of Ser. No. 621,033, March 6, 1967, abandoned. This application Aug. 31, 1970, Ser. No. 68,560

Int. Cl. G03c *1/76, 3/00*

U.S. Cl. 96—68 **2 Claims**

1. A composite film element adapted for the recording of images photographically, comprising a base having thereon two light-sensitive layers, one of said layers comprising a light-sensitive print-out silver halide emulsion of the ammoniacal type capable of yielding, photolytically, a visible image immediately upon exposure to actinic radiation, and the other of said layers comprising a light-sensitive developing-out composition capable of forming a latent non-visible image upon exposure to actinic radiation, said image in the latter layer being capable of being rendered visible by a post exposure development operation of a chemical nature, and wherein said print-out layer and said developing-out layer are disposed on opposite sides of the film base, and wherein a stripping layer is provided intermediate said print-out layer and said base.

3,844,790

PHOTOPOLYMERIZABLE COMPOSITIONS WITH IMPROVED RESISTANCE TO OXYGEN INHIBITION

Catherine Teh-Lin Chang, Claymont; Joseph John Sheeto, Jr., and Jacob Beutel, both of Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 2, 1972, Ser. No. 258,951

Int. Cl. G03c *1/68, 1/76, 1/94, 1/78*

U.S. Cl. 96—86 P **12 Claims**

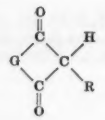
1. In a photosensitive composition comprising:

a. a hydrogen- or electron-donor compound,

b. a hexaarylbiimidazole,

c. an ethylenically unsaturated compound capable of forming a high polymer by free radical initiated, chain propagating, addition polymerization,

the improvement wherein component (a) is a cyclic compound of the formula



where R is an alkyl or aralkyl group, and G is a bivalent organic radical completing a five or six membered ring, R and G being independently unsubstituted or substituted with substituents that do not interfere with free radical induced, addition polymerization.

3,844,791

PHOTOSENSITIVE MATERIAL COMPRISING POLYACETYLENIC AMINE SALTS

Melvin S. Bloom, Rochester, and Sally S. Fico, Bergen, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 153,059, June 14, 1971, Pat. No. 3,743,505. This application Dec. 14, 1972, Ser. No. 315,249The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.

Int. Cl. G03c *1/00*

U.S. Cl. 96—88 **5 Claims**

1. In a photographic element comprised of a carrier means fixedly positioning discrete crystals of a photosensitive crystalline polyacetylenic compound having a minimum of two acetylenic linkages as a conjugated system, the improvement in

which said polyacetylenic compound is a polyacetylenic amine salt having the formula:

$$B-(CH_2)_x(C \quad C)_n(CH_2)_y-COO^-A^+$$

wherein:

n is an integer greater than 1;

x and *y* are each an integer from 0 to 10;

A is $NRR^1R^2R^3$ wherein R, R^1, R^2 and R^3 are H, alkyl of from 1 to 15 carbon atoms, aryl or substituted alkyl having substituents chosen from the group consisting of hydroxy, amino, carboxy and substituents;

B is selected from the group consisting of

CH_3,

COO^-,

$COOR^4$,

$CONHR^5$,

$CONHNHR^6$, and

R^7NHCOO radicals, wherein

R^4 is H or lower alkyl,

R^5 is an alkyl or substituted alkyl of from 3 to 8 carbon atoms in which the substituents are chosen from the group consisting of hydroxy, amino, alkylthio or methoxy substituents;

R^6 is alkyl or phenyl, and

R^7 is an alkyl of from 1 to 8 carbon atoms or phenyl.

3,844,792
A PHOTOSENSITIVE COMPOSITION CONTAINING A PHOTOCHROMIC BENZOYLCHROMONE OR DIBENZOFURAN AND A STRONG ORGANIC AMINE BASE

Arnold Zweig, Westport, and Kenneth Robert Huffman, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 7, 1972, Ser. No. 313,027
Int. Cl. G03c 1/52
U.S. Cl. 96—90 PC **5 Claims**

1. A photosensitive composition containing a photochromic 2-benzhydryl-3-benzoylchromone and a strong organic amine base.

3,844,793
PHOTOSENSITIVE AZIDO MATERIAL

Balwant Singh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 82,129, Oct. 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 29,527, March 17, 1970, abandoned. This application Dec. 8, 1972, Ser. No. 313,378The portion of the term of this patent subsequent to Oct. 16, 1989, has been disclaimed.
Int. Cl. G03c 1/52, 1/72
U.S. Cl. 96—91 N **7 Claims**

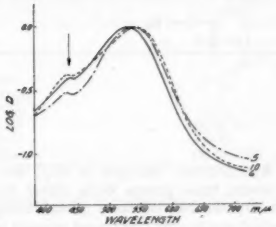
1. An image-forming material comprising a suitable photographic substrate having a coating deposited thereon, the coating comprising a permeable film-forming plastic having a photosensitive, volatile, peri-substituted naphthalene azido compound dispersed therein wherein the azido compound has one of the following substituents oriented peri to the azido group: amino; hydroxy; azido; trifluoroacetamido;

wherein R is lower alkyl having from C_1-C_6 or phenyl.

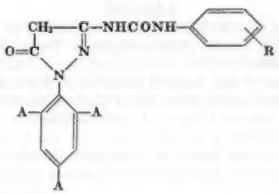
3,844,794
MAGENTA COUPLERS

Mario Gandino, and Beretta Paolo, both of Savona, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

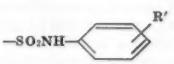
Continuation of Ser. No. 43,031, June 3, 1970, abandoned. This application July 3, 1972, Ser. No. 268,449
Claims priority, application Italy, June 13, 1969, 37892/69
Int. Cl. G03c 1/40
U.S. Cl. 96—100 **8 Claims**



1. A silver halide photographic emulsion which includes a coupler of the formula



wherein two of the A groups are halogen, the remaining A group is alkoxy, and wherein R is alkyl, alkoxy, or



wherein R′ is alkyl or alkoxy.

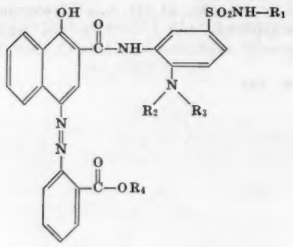
3,844,795
SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING AZO MASKING COUPLERS

Walter Puschel, Leverkusen, Germany; Gaston Jacob Benoy, Edegem, Belgium, and Dietmar Kalz, Koeln, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 4, 1972, Ser. No. 250,300
Claims priority, application Germany, May 7, 1971, 2122570
Int. Cl. G03c 1/40
U.S. Cl. 96—100 **5 Claims**

1. A light sensitive color photographic material having at least one silver halide emulsion layer which contains a red

cyan coupler, which cyan coupler is of the following general formula:



in which

R_1, R_2 or R_3 represents hydrogen or alkyl with up to 18 carbon atoms, these groups being either the same or different, at least one of these groups being an alkyl radical which renders the compound resistant to diffusion and

represents alkyl having four to seven carbon atoms or cycloalkyl.

3,844,796

COLORED GLASS COMPOSITIONS

John Jasinski, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 883,317, Dec. 8, 1969, abandoned. This application Mar. 30, 1972, Ser. No. 239,725

Int. Cl. C03c *3/24, 3/04;* **G02b** *5/20*

U.S. Cl. 106—52 **3 Claims**

1. A chocolate brown colored glass composition which absorbs ultraviolet light and which consists essentially of:

Component	Weight Percent
SiO_2	$71.76_{-21.8}$
Al_2O_3	1.95
CaO	10.5
MgO	0.21
Fe_2O_3	$0.056_{-0.003}$
Na_2O	14.46–14.49
K_2O	0.20
Mn_2O_3	0.11
CrO_3	$0.078_{-0.070}$
Cr_2O_3	$0.020_{-0.041}$

wherein the ratio of Cr_2O_3 to MnO ranges from 0.08:0.1 to 0.1:0.1.

3,844,797

PHOTOSENSITIVE RECORDING MATERIAL

Jozef Frans Willems, Wilrijk; Albert Lucien Poot; Frans Clement Heugebaert, both of Kontich; Anton Leon Vandenberghe, Hove, all of Belgium, and Anita Von Konig, Leverkusen, Germany, assignors to AGFA-Gevaert, Mortsel, Belgium

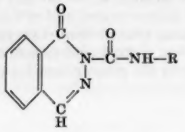
Filed Dec. 29, 1972, Ser. No. 319,604

Claims priority, application Germany, Apr. 27, 1972, 2220597

Int. Cl. G03c *1/02*

U.S. Cl. 96—114.1 **7 Claims**

1. In a photographic recording material having a lightsensitive layer comprising a substantially non-light-sensitive silver salt, a reducing agent, a toning agent and in admixture therewith a light-sensitive heavy metal compound and/or a polymethine sensitizing agent for the spectral sensitization of the non-light-sensitive silver compound, the improvement wherein the light-sensitive layer comprises a phthalazinone toning agent according to the following general formula:



wherein:

R represents an alkyl group, a phenyl group, a naphthyl group, a benzyl group or a cycloalkyl group.

3,844,798

SPECTRALLY SENSITIZED LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Hans Ohlschlager, Koeln; Oskar Riester, Leverkusen; Johannes Gotze, Bergisch-Neukirchen, and Alfons Dorlars, Leverkusen, all of Germany, assignors to Agfa-Geveert Aktiengesellschaft, Levenkusen, Germany

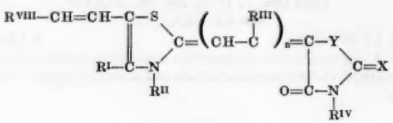
Continuation of Ser. No. 47,157, June 17, 1970,. This application May 8, 1972, Ser. No. 251,414

Claims priority, application Germany, July 10, 1969, 1934891

Int. Cl. G03c *1/10*

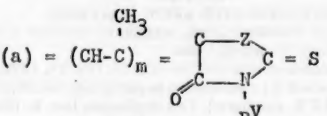
U.S. Cl. 96—127 **5 Claims**

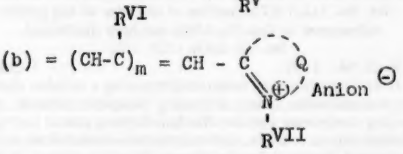
1. A light-sensitive photographic material which comprises a silver halide and spectral sensitizer of the following formula:



in which

X is a sulfur atom or is one of the following groups (a), or (b);





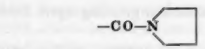
Y is an oxygen or sulfur atom or a group

or $-CO-NR^{I}-$

Z is an oxygen or sulfur atom

wherein

R^{VIII} is COOH, $-COOC_2H_5$,



R^I is an alkyl, or aryl group;
R^{II} and R^{VII}, which may be the same or different, is an aliphatic group;
R^{III} is a hydrogen atom or an alkyl group;
R^{IV} is a saturated or olefinically unsaturated aliphatic or aryl group;
R^V is a saturated aliphatic group;
R^{VI} is an alkoxy group;
Q represents the ring members required to complete a thiazole or oxazole ring;
n is 0, and 1; and
m is 0, and 1; and Anion is any anion but may be absent if the dye molecule contains an acid group in anionic form.

3,844,799
ELECTROLESS COPPER PLATING

William L. Underkofler, Vestal, and Theodore D. Zucconi, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,363
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 **7 Claims**

1. An electroless copper plating process in which copper is deposited from a bath solution comprising cupric ions, a reducing agent, a surfactant, and a complexing agent for cupric ions, said process being characterized by the improvement according to which the temperature of the bath is maintained continuously between 70°C and 80°C and the bath is adjusted to maintain continuously a cyanide ion concentration within the range of 0.0002 to 0.0004 molar.

3,844,800
FRICTION MATERIAL

Norris A. Hooton, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Continuation-in-part of Ser. No. 146,411, May 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 799,345, Feb. 14, 1969, abandoned. This application Feb. 20, 1973, Ser. No. 333,585
Int. Cl. C09k *3/14*
U.S. Cl. 106—36 **12 Claims**

1. A friction material for use as a brake lining consisting of: a metallic powder material selected from a group consisting of copper, iron, nickel and mixtures thereof for forming a matrix upon being sintered, said selected metallic material comprising from 25% to 80% by volume of the total friction material; a crystalline ceramic powder material selected from a group consisting of aluminum oxide, crystalline silicon oxide, mullite, kyanite, sillimanite, cordierite, forsterite and mixtures thereof for enhancing the frictional characteristics of the friction material, said selected ceramic material comprising from 0% to 30% by volume of the total friction material;

graphite particles comprising from 0% to 32% by volume of the total friction material for controlling oxidation of the brake lining; and

silicate glass powder particles having a viscosity above $10^{2.5}$ poises at temperatures between 1,000°C and 1,100°C and a particle size between −20 mesh and + 325 mesh comprising from 1% to 50% by volume of the total friction material for controlling the formation of a surface glaze on the friction material created by thermal energy during engagement with a corresponding friction element to reduce the wear rate of the friction material.

3,844,801
CLADDING GLASS COMPOSITIONS FOR LIGHT TRANSMITTING GLASS FIBERS

Warren W. Wolf, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 113,688, Feb. 8, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 299,510
Int. Cl. C03c *13/00*; G02b *5/16*
U.S. Cl. 106—50 **1 Claim**

1. A light transmitting optical fiber bundle comprising a plurality of light transmitting glass fibers;

said light transmitting glass fibers comprising a core glass surrounded by a cladding glass;

said core glass consisting essentially by weight of:

	Percent
SiO_2	23–41
Al_2O_3	7–10
B_2O_3	2.5–11
K_2O	up to 10
BaO	34–59
Sb_2O_3	up to 0.05

and said cladding glass consisting essentially by weight of:

	Percent
SiO_2	64–68
Al_2O_3	5–9
B_2O_3	11–12
Na_2O	13–15
Li_2O	2–3

3,844,802
BURNED PERICLASE BRICK AND METHOD OF MAKING

Walter S. Treffner, Linthicum Heights, and Frank P. Filer, Baltimore, both of Md., assignors to General Refractories Company, Philadelphia, Pa.

Continuation of Ser. No. 16,237, March 3, 1970, abandoned. This application June 12, 1972, Ser. No. 261,987
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 **10 Claims**

1. In the manufacture of a burned periclase brick having a MgO content of at least 90 percent by weight wherein a mixture of relatively coarse calcined magnesite having a particle size such that substantially all thereof passes through a 3-mesh screen and is retained on a 48-mesh screen and of relatively fine fraction having a particle size such that substantially all thereof passes through a 48-mesh screen and the relatively coarse calcined magnesite makes up from about 50 to about 80 percent, by weight, of said mixture, is pressed into brick form and fired at a temperature of at least 2,900°F., the improvement wherein said relatively coarse calcined magnesite has a $CaO:SiO_2$ weight ratio of from above 2:1 to about 5:1 and the relatively fine fraction has a $CaO:SiO_2$ weight ratio of from about 1.5:1 to below 2:1.

3,844,803
ALUMINUM OXIDE MATERIAL FOR LINING THE FLOORS AND SKIDWAYS OF PUSHER-TYPE REHEATING FURNACES

Martin Blanke, Ranzel, Troisdorf, and Karl Hass, Niederkassel, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of Ser. No. 113,603, Feb. 8, 1971, which is a continuation of Ser. No. 761,392, Sept. 16, 1968, abandoned. This application Mar. 5, 1973, Ser. No. 337,793
Int. Cl. C04b *35/10*
U.S. Cl. 106—65 **4 Claims**

1. A fusion cast refractory shaped body suitable for forming a protective coating on the floors and skidways of pusher-type

reheating furnaces consisting essentially of 97–99 wt-% Al_2O_3; 0.3–0.8 wt-% SiO_2; 0.2–0.4 wt-% TiO_2; 0.05–0.11 wt-% Fe_2O_3; 0.33–0.94 wt-% CaO or MgO or mixtures of these alkaline earth oxides; and 0.22–0.24 wt-% Na_2O or K_2O or mixtures of these alkali oxides.

3,844,804

SILICATE FOAM STRUCTURES AND METHOD OF PREPARATION

John C. Horai, and Calvin W. Sheeler, Jr., both of Hagerstown, Md., assignors to GAF Corporation, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 215,166

Int. Cl. C04b *35/16*

U.S. Cl. 106—75 **29 Claims**

1. A method for preparing a foamed silicate structure comprising:

a. premixing a highly absorbent, amorphous lightweight reactant carrier with a liquid agent reactive with silicate to improve the water-insolubility and firmness of said silicate upon foaming thereof, said carrier and said agent being mixed in proportions such that said agent is essentially totally absorbed by the reactant carrier, resulting in an essentially dry premix composition;

b. mixing said dry premix composition with an aqueous alkali metal silicate having a total solids content of from about 35 percent to about 55 percent by weight to form a moldable silicate mix;

c. heating said moldable silicate mix in a mold at a temperature sufficient to cause the water content of the mix to be rapidly removed therefrom, small water vapor gas bubbles being formed within and throughout the mix to produce a lightweight, multi-cellular foam structure.

3,844,805

DRY CUTTING COMPOUND FOR PROTEIN GLUES AND METHOD OF USE

Ronald W. Long, Florissant; Robert P. Starr, Spanish Lake, both of Mo. and James C. Hubert, Belleville, Ill., assignors to Ralston Purina Company, St. Louis, Mo.

Filed July 14, 1972, Ser. No. 271,980

Int. Cl. C09d *1/04*; **C09h** *5/00*, *11/00*

U.S. Cl. 106—79 **5 Claims**

1. A dispersing and preservative compound for "cold cutting" unhydrolyzed soy protein glues consisting essentially of from about 45 to 75 percent by weight of a silicate alkalizing agent selected from the group consisting of sodium and potassium silicate alkalizing agents having a base to SiO_2 ratio of 1:1 or greater, from about 10 to 20 percent by weight of a barium metaborate preservative, from about 0 to 30 percent by weight of a glue plasticizer, and from about 0 to 10 percent by weight of defoamers, wetting agents and dust control agents.

3,844,806

PROCESS FOR THE PRODUCTION OF HIGHLY CONCENTRATED DYESTUFF AND PIGMENT PREPARATIONS

Jacques Wegmann, Bettingen, and Carl Becker, Basel, both of Switzerland, assignors to CIBA-GEIGY AG, Basel, Switzerland

Filed Jan. 5, 1973, Ser. No. 321,168

Claims priority, application Switzerland, Jan. 7, 1972, 237/72

Int. Cl. C08h *17/02*; **C08f** *45/24*

U.S. Cl. 106—193 D **12 Claims**

1. A process for the production of a readily dispersible concentrated, liquid or solid dyestuff preparation, comprising the sequential steps of

a. subjecting a suspension of a difficultly water-soluble or water-insoluble dyestuff, in water and/or an organic solvent having limited solubility in water to a particle-size-reducing operation, in the presence of a mechanical grinding agent until the particle size of the suspended dyestuff is no more than 10 microns,

b. removing the mechanical grinding agent from the dyestuff suspension

c. adding the water or the organic solvent having limited solubility in water necessary for the formation of a two-phase system,

d. adding, at this point or, at least in part, prior to completion of step (a), at least one high-molecular carrier selected from the group consisting of lower alkyl cellulose ether, hydroxy-lower-alkyl cellulose ether, cellulose acetate, cellulose chloroacetate, cellulose nitrate, cellulose acetate butyrate, cellulose acetate phthalate, ethyleneglycol esters of hydrogenated rosin, ethyleneglycol esters of polymerized rosin, polymethacrylic acid ethyl ester, polyvinyl alcohol, polyvinyl chloride-polyvinyl acetate copolymer, polyacrylonitrile-polyvinyl chloride-polyvinylidene chloride copolymer, magnesium behenate, and polyvinyl ether of octadecylalcohol, which carrier is soluble in water or in the organic solvent having limited solubility in water, but insoluble in the two-phase system,

e. stirring the suspension until the organic phase containing the dyestuff has become evenly dispersed over the surface of the high-molecular carrier, and

f. removing part of the water and/or the organic solvent to give a dyestuff preparation dispersion in water and/or organic solvent or removing substantially all of the water and the organic solvent to give a dry dyestuff preparation.

3,844,807

COMPOSITIONS AND METHOD FOR MAKING WATER RESISTANT, SHORT TACK ADHESIVES

Gerald F. Bramel, Niantic, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed May 29, 1973, Ser. No. 364,571

Int. Cl. C08b *27/22*

U.S. Cl. 106—213 **15 Claims**

1. An adhesive composition dry premix consisting essentially of:

75–92 percent by weight of an acid hydrolyzed starch, having a Brookfield viscosity ranging from: 100–200 cps. at 100°F., 100 rpm, using a No. 1 spindle and 80 g starch, 320 g water and cooked, to 11,500–12,500 cps, when tested at 15 percent solids after cooking, using a No. 5 spindle at 20 rpm at 100°F., up to 20 percent by weight of an hydroxyalkylated starch, about 0.3 to 0.7 percent by weight of a first inorganic salt of a weak base and a strong acid, about 3 percent by weight of a predispersed clay, about 1.5 to 2.5 percent of a second inorganic salt of a strong base and a strong acid, and about 0.3 to 1.5 percent by weight of an emulsifier-surfactant selected from the group consisting of polyoxyethylene laurate poolyoxyethylene stearates, polyoxyethylene oleates, polyoxyethylene tallates, and the reaction product of tridecyl alcohol and ethylene oxide, and mixture thereof said dry premix being stable in liquid form for more than ten days when mixed with about 77.2 percent by weight added water and about 1.3 percent by weight added 65 percent solids urea formaldehyde resin at a pH ranging from 3–5.

3,844,808

SYNTHETIC AGGREGATES MADE FROM IMPURE BAUXITE

Ransom James Murray, Gravesend, England, assignor to The Associated Portland Cement Manufacturers Limited, London, England

Filed Dec. 29, 1971, Ser. No. 213,855

Claims priority, application Great Britain, Jan. 4, 1971, 236/71

Int. Cl. C08h *17/02*

U.S. Cl. 106—288 B **9 Claims**

1. A method of preparing a synthetic aggregate useful as a roadstone by sintering a material consisting essentially of a

member of the group consisting of siliceous bauxite and ferruginous bauxite, characterized in that it comprises the steps of grinding said material to give a particle size in the range 35 percent residue on a 52 mesh B.S. sieve to 1 percent residue on a 170 mesh B.C. sieve, agglomerating the particles and sintering said material at least until rapid changes in bulk density cease, at a temperature at least 35° below the temperature which would result in minimum porosity of the fired material but sufficiently high that the product has an A.A.V. not exceeding 12.

3,844,809

WET-PELLETING OF CARBON BLACK

Lawrence K. Murray, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1973, Ser. No. 346,831
Int. Cl. C08h *17/08*
U.S. Cl. 106—307 **10 Claims**

1. A method of producing carbon black pellets which comprises:

a. introducing flocculent black and a non-ionic surfactant into contact to form a mixture, said non-ionic surfactant consisting principally of randomly repeating $-CH_2CH_2O-$ and $-Si(CH_3)_2-$ units in the unit ratio of 7 to 1, respectively, wherein, in the molecule 4 to 5 $-Si(CH_3)_2-$ units are present and wherein the molecule is terminated with hydroxyl groups and wherein said molecule has no silicon to silicon bonds and has no silicon to hydrogen bonds; and,

b. pelleting the mixture to form carbon black pellets.

3,844,810

PIGMENT DISPERSION

Edward T. Pollard, Vermilion, Ohio, assignor to Plastic Molders Supply Co., Inc., Fanwood, N.J.

Division of Ser. No. 129,968, March 31, 1971, Pat. No. 3,728,143. This application Nov. 28, 1972, Ser. No. 310,022The portion of the term of this patent subsequent to Apr. 17, 1990, has been disclaimed.
Int. Cl. C09c *3/00*
U.S. Cl. 106—308 N **20 Claims**

1. A pigment composition for use in molded thermoplastic and thermoset articles which is comprised of pigment particles which are substantially encapsulated and coated by a fatty acid amide, said pigment particles being in a substantially unagglomerated state, said composition containing from about 10 to about 90 percent by weight of said fatty acid amide, based upon the weight of said fatty acid amide and said pigment, said composition being solid at room temperature, said fatty acid amide being solid at room temperature and said fatty acid amide containing no substituent except one or more hydroxyl group.

3,844,811

AGGLOMERATION OF PIGMENT PARTICLES AND COMPOSITIONS UTILIZING SAME

Carl Brynko, Oakland, N.J., assignor to Reprographic Materials, Inc., Pompton Lakes, N.J.

Continuation-in-part of Ser. No. 98,080, Dec. 14, 1970, Pat. No. 3,745,118, which is a continuation-in-part of Ser. No. 2,416, Jan. 12, 1970, abandoned. This application July 31, 1972, Ser. No. 276,687
Int. Cl. C08h *17/02;* **C09c** *1/04, 1/58*
U.S. Cl. 106—309 **16 Claims**

1. A process for preparing larger pigment particles which comprises mixing a coacervatable material with an aqueous dispersion of water-insoluble pigment particles and an ionic surfactant, causing coacervation of said coacervatable material and effecting agglomeration of said pigment particles to an average mean size of from 1–30 microns, and recovering said agglomerated pigment particles.

3,844,812

COLORANT COMPOSITION FOR CLAY PRODUCTS AND METHOD OF MAKING COLORED CLAY PRODUCTS

John Henry Fishwick, Downingtown, Pa., assignor to Foote Mineral Company, Exton, Pa.

Filed Dec. 15, 1972, Ser. No. 315,469
Int. Cl. C08k *1/02, 1/12*
U.S. Cl. 106—316 **2 Claims**

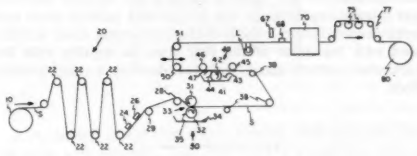
1. A colorant composition for shaped clay products consisting essentially of a finely-divided mixture of from about 90 to 99 percent of an ore selected from the group consisting of manganese, chromium, and iron, and from about 1 to about 10 percent of a color-promoting flux selected from the group consisting of borax, rasorite, colemanite, nepheline syenite, mica and talc, said percentages being by weight, based on the total weight of said colorant composition.

3,844,813

PRECISION DEPOSITION ONTO A TEXTILE SUBSTRATE

William A. Leonard, Lyman; Anthony F. Kunak, Spartanburg; Cecil M. Burns, Greer, all of S.C., assignors to M. Lowenstein & Sons, Inc., New York, N.Y.

Continuation of Ser. No. 885,831, Dec. 17, 1969, abandoned. This application Mar. 27, 1972, Ser. No. 238,250
Int. Cl. B05c *3/20;* **B44d** *1/02*
U.S. Cl. 117—7 **30 Claims**



1. A method of coating an interstice containing textile substrate on one side only comprising the steps of:

a. feeding said substrate to a roll type applicator unit at a predetermined speed, said substrate being in a smooth, flat condition;

b. controlling tension on said substrate;

c. engaging said substrate with a roll means prior to said applicator, said roll means being preset with respect to said applicator to limit the degree of contact between said substrate and said applicator, said presetting of said roll means being based on the particular substrate being coated, a particular composition being applied to said one side thereof, tension on said substrate and the speed of said substrate;

d. applying a metered amount of said composition onto said one side of said substrate only without forcing any of said composition through said substrate to an opposite side thereof and controlling the viscosity of said composition during application thereof, said substrate being contacted only on said one side during application of said composition thereto;

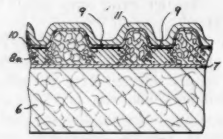
e. passing said substrate over an evening means and immediately thereafter under a further roll means, said evening means and said roll means being prearranged and combining to even composition across said one side of said substrate and metering off any excess composition therefrom without forcing any of said composition through said substrate to said opposite side thereof; and

f. drying said substrate, said one side of said substrate having been out of contact between said evening means and said drying step.

3,844,814
FOAMED DECORATIVE COVERING MATERIAL AND METHOD OF MANUFACTURE

Phillip S. Bettoli, Martinsville, N.J., and Edward R. Erb, Geryville, Pa., assignors to General Aniline & Film Corporation, New York, N.Y.

Filed July 6, 1966, Ser. No. 563,157
Int. Cl. B44d *1/32*; D21h *1/10*
U.S. Cl. 117—11 1 Claim



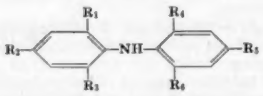
1. A method for making a decorative sheet type covering product having a relief pattern effect, comprising applying to a base sheet a first layer of polyvinyl chloride resin material having dispersed therein a thermally decomposable foaming agent, laminating two additional coating materials with said first layer, one being a second layer comprising a catalytic agent acting to lower the decomposition temperature of said foaming agent, and the other comprising an agent selected from the group consisting of benzotriazole and aminotriazole, said agent acting to deactivate the catalytic agent, the deactivating agent being applied in spaced pattern areas lying at one face of the layer comprising the catalytic agent, and heating the laminate to a temperature sufficient to effect substantial decomposition of the foaming agent in the areas of said first layer intervening between the deactivated pattern areas and thereby expand the thickness of the intervening areas as compared with the areas of the first layer in registry with the deactivated pattern areas, and thus develop a relief pattern effect.

3,844,815
FORON YELLOW AS A TONER COLORANT

Richard A. Parent, Fairport, and James A. Brado, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1972, Ser. No. 316,142
Int. Cl. G03g *13/08*
U.S. Cl. 117—17.5 13 Claims

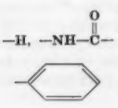
1. An electrostatographic developer composition comprising a carrier, a resin tone and a dye colorant, said dye colorant being substantially dispersed throughout said toner and said dye colorant comprising a compound satisfying the following formula:



where

R_{1-6}=—Cl, —Br, —F, —NO_2, —NHc—CH_3

or other acylamides,



and other aryl carboxamides, —OCH_3 and other alkyl or aryl ethers, —CH_3 and other alkyl groups,

and other aryl groups both substituted and unsubstituted, —CN, —OH, —NH_2, —$NHCH_3$, and other mono and disubstituted alkyl and aryl substituted amines, —SO_2NH_2, —SO_2N—CH_3 and other mono and disubstituted alkyl and aryl sulfonamides, —COOH, —$COOCH_3$ and other alkyl and aryl esters.

3,844,816
GRAFTED, POLYMERIC MICROCAPSULAR SYSTEM

Anthony E. Vassiliades, Deerfield; David N. Vincent, Glenview, both of Ill., and Shrenik Shroff, Bombay, India, assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Continuation-in-part of Ser. No. 142,772, May 12, 1971,. This application Mar. 15, 1972, Ser. No. 235,008
Int. Cl. B41m *5/12*
U.S. Cl. 117—36.2 10 Claims

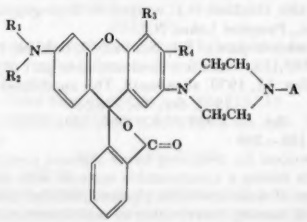
1. A record sheet which comprises a substrate having a coating on a surface thereof, which coating comprises pressure-rupturable, image-forming microcapsules, a binder for said image-forming microcapsules and an effective amount of microcapsular load-bearing agents, said load-bearing agents consisting essentially of discrete, substantially spherical non-pressure rupturable microcapsules having a solid, polymeric shell and a solid, polymeric core, said shell being adherable by said binder to said substrate, said polymeric core being at least partially grafted to said polymeric shell, said core and said shell being formed of different polymeric materials, said load-bearing microcapsules having a larger average diameter than said imageforming microcapsules, said load bearing agents having an average diameter in the range of between about 5 and about 50 microns.

3,844,817
PRESSURE SENSITIVE COPYING PAPER

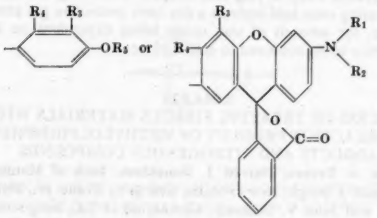
Mutsuo Terayama, and Kenji Yamamoto, both of Oosaka, Japan, assignors to Yamamoto Kagaku Gosei Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 208,432, Dec. 15, 1971,. This application Nov. 29, 1972, Ser. No. 310,586
Claims priority, application Japan, Dec. 15, 1970, 45-112052
Int. Cl. B41c *1/06*; B41m *5/00*
U.S. Cl. 117—36.2 7 Claims

1. In a pressure sensitive copying paper, a paper sheet having applied thereto at least one fluoran compound of the



wherein each of R_1 and R_2 is methyl or ethyl; each of R_3 and R_4 is hydrogen, methyl or halogen; and A is either



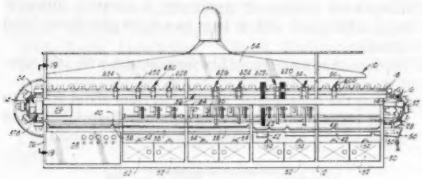
wherein R_5 is methyl or ethyl; and
R_1, R_2, R_3 and R_4 are as defined above.

3,844,818

METHOD FOR PAINTING A PLURALITY OF ARTICLES

Jimmie H. Morrison, Norman, Okla., assignor to Storm Manufacturing Company, Norman, Okla.

Division of Ser. No. 813,643, Apr. 4, 1969, Pat No. 3,633,536. This application Oct. 1, 1971, Ser. No. 185,587
Int. Cl. B44d *1/52*
U.S. Cl. 117—38 **7 Claims**



1. A method of painting limited areas on a plurality of articles, such as fishing lures and the like, which comprises the steps of:
- supporting said articles for independent movement on a plurality of carriage members;
- advancing said carriage members and articles supported thereon over a track;
- stopping each of said carriage members and articles supported thereon adjacent to a template positioned parallel to said track and formed in the shape of the limited area to be painted on said articles;
- painting each of said articles through said template with paint directed from a stationary source as said articles are stopped and stationary so that a limited area is painted on each article without smearing or lack of definition of the painted area on the article; and
- advancing each of said carriage members and said article supported thereon after each of said articles has been painted.

3,844,819

COATING OF PAPER

William Windle, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Anstell, Cornwall, England

Continuation-in-part of Ser. No. 92,514, Nov. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 711,881, March 11, 1968, abandoned. This application Feb. 2, 1973, Ser. No. 329,199
Int. Cl. C08b *25/00*
U.S. Cl. 117—65.2 **5 Claims**

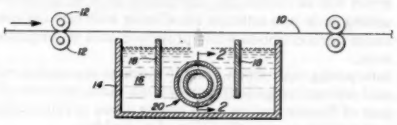
1. A method of producing a coated paper having a semi-matt finish which method comprises (A) coating a base paper with a paper coating composition which comprises a dispersion of a pigment in an aqueous medium containing an adhesive, said pigment essentially consisting of (a) a kaolin clay, of which at least 75 percent by weight of the particles have an equivalent spherical diameter smaller than two microns, and having no particles having an equivalent spherical diameter larger than 100 microns and (b) a calcium carbonate pigment which is a natural chalk whiting formed from the remains of coccoliths and which constitutes from 40 to 75 percent by weight of the pigment, and (B) subjecting the coated base paper to a light supercalendering treatment in which the product of the number of passes of the coated paper between the nip of a pair of supercalendering rolls and the effective line pressure, in pounds per linear inch, does not exceed about 2500 and the effective line pressure does not exceed about 500 pounds per linear inch.

3,844,820

METHOD OF APPLYING A COATING TO BOTH SIDES OF A MOVING STRIP

Robert S. Shaffer, Glen Burnie, Md., and Laurence B. Caldwell, Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 9, 1972, Ser. No. 271,455
Int. Cl. B05c *9/04;* **B44d** *1/02*
U.S. Cl. 117—68 **4 Claims**



1. A method of simultaneously coating both sides of a moving strip with solution, said strip having a pass line above a bath of said solution, comprising:
- a. lifting a column of said solution out of said bath, said column being wider than said strip and higher than the pass line of said strip,
- b. passing said strip through said column of solution, and
- c. controlling the speed of said strip and the height and width of said column relative to the width of said strip and height of the strip pass line whereby both sides of said strip are coated simultaneously.

3,844,821

GLASS FIBER REINFORCED ELASTOMERS

John H. Lanik, North Smithfield, R.I., assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

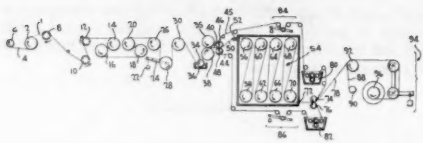
Filed Apr. 14, 1972, Ser. No. 244,191
Int. Cl. B32b *17/04, 17/10;* **C08g** *37/20*
U.S. Cl. 117—72 **12 Claims**

1. A glass fiber bundle formed of a plurality of glass fibers and an impregnant in the bundle, said impregnant comprising 2 to 10 parts by weight of a resorcinol-aldehyde resin, 20 to 60 parts by weight of a vinyl pyridine-butadiene-styrene terpolymer, 15 to 40 parts by weight of a resin selected from the group consisting of a copolymer of vinyl chloride and vinylidene chloride and a dicarboxylated butadiene-styrene copolymer, 5 to 30 parts by weight of an incompatible microcrystalline wax and 1 to 35 parts by weight of a terpolymer of acrylonitrile-butadiene-styrene, said terpolymer of acrylonitrile, butadiene and styrene containing 5 to 25 parts by weight of butadiene per 100 parts by weight of terpolymer and a weight ratio of styrene to acrylonitrile of 0.9 to 2.0.

3,844,822
PRODUCTION OF UNIFORMLY RESIN IMPREGNATED CARBON FIBER RIBBON

A. Evan Boss, Mountainside; Michael J. Ram, West Orange, both of N.J., and Thomas K. Reynolds, Santa Monica, Calif., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,339
Int. Cl. B44d 1/48
U.S. Cl. 117—119.6 19 Claims



1. An improved process for the production of a uniformly resin impregnated ribbon of a carbonaceous fibrous material which is suitable for use in the manufacture of carbon fiber reinforced composite structures comprising:

a. continuously conveying to an impregnation zone a carbonaceous fibrous ribbon containing at least about 90 percent carbon by weight,

b. forcing a liquid solventless system having a viscosity of about 500 to 10,000 cps, comprising an A-stage thermosetting resin into intimate association with said carbonaceous fibrous ribbon while present in said impregnation zone,

c. interposing said ribbon while in intimate association with said solventless system between the outer surfaces of a pair of flexible endless belts having a non porous surface and a width greater than that of said ribbon,

d. continuously passing said ribbon in the direction of its length while interposed between said flexible endless belts through a substantially enclosed heating zone provided with a heated gaseous atmosphere while substantially suspended therein wherein said belts and said ribbon are looped in a single wrap about each of a multiplicity of rotating parallel rollers wherein the inner surfaces of said belts are in alternating contact with said rollers as said belts and said ribbon progress through said heating zone with said ribbon being out of contact with said rollers and wherein said thermosetting resin in intimate association with said ribbon is converted to a B-stage consistency,

e. continuously withdrawing said ribbon from said heating zone while interposed between said outer surfaces of said pair of flexible endless belts and while said thermosetting resin in intimate association with said ribbon remains in a B-stage consistency, and

f. separating said resulting resin impregnated carbonaceous fibrous ribbon from said flexible endless belts.

3,844,823
METHOD FOR THE PRODUCTION OF CERAMIC BODIES WITH CONTROLLED SURFACE RESISTIVITY

Horst Hofmann, and Helmut Katz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 25, 1972, Ser. No. 291,712
Claims priority, application Germany, Oct. 19, 1971, 2152011
Int. Cl. B44d 1/02
U.S. Cl. 117—119 12 Claims

1. A method of producing a surface of controlled resistivity onto a ceramic body which comprises applying an aqueous solution containing lithium poly-molybdate, lithium fluoride and a water soluble organic binding agent and having a high melting oxide selected from the group consisting of aluminum oxide, beryllium oxide and magnesium oxide dispersed therein to a ceramic body, drying said body, and sintering the resulting coating onto said body in a dry inert protective gas atmosphere, the amount of said oxide being dependent on the resistivity to be achieved in said surface.

3,844,824
PROCESS OF TREATING FIBROUS MATERIALS WITH THE REACTION PRODUCT OF METHYLOLPHOSPHINE ADDUCTS AND NITROGENOUS COMPOUNDS

Wilson A. Reeves; Darrell J. Donaldson, both of Metairie; Donald J. Daigle, New Orleans; George L. Drake, Jr., Metairie, and John V. Beninate, Gretna, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 141,362, May 7, 1971, abandoned. This application Nov. 15, 1972, Ser. No. 306,774
Int. Cl. C09d 5/18
U.S. Cl. 117—136 10 Claims

1. A process for producing flame resistant organic fibrous materials, said process comprising:

a. reacting tris(hydroxymethyl) phosphine with a monomeric nitrogenous compound containing a trivalent nitrogen atom substituted with at least one hydrogen or methylol radical, so as to obtain a soluble methylolphosphine adduct containing unreacted methylol phosphorus radicals;

b. forming a solution of said soluble adduct and at least one nitrogenous compound containing a trivalent nitrogen atom substituted with at least two hydrogen or methylol radicals;

c. impregnating an organic fibrous material with said solution; and

d. heating the impregnated material at from about 90° C. to about 170° C. until copolymerization and insolubilization of the adduct and nitrogenous compound occurs.

3,844,825
METHOD OF PRODUCING AN ACRYLIC FIBER HAVING AN IMPROVED TOUCH LIKE ANIMAL HAIR

Kunio Tanahashi, Okayama, Japan, assignor to American Cyanamid Company, Stamford, Conn.

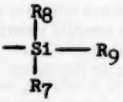
Filed Nov. 30, 1972, Ser. No. 311,041
Int. Cl. B44d 1/09; C10m 3/22
U.S. Cl. 117—138.8 UA 10 Claims

1. A process for improving the tactile qualities of acrylic fibers which comprises treating said fibers with a liquid medium inert with respect to said fibers containing therein a mixture of (A) from about 10 to 60 weight percent of a copolymer of (1) 70–92 mole percent of acrylonitrile, (2) 30–8 mole percent of a monomer of a formula selected from $CH_2{=}CR_1COOR_2$ and $CH_2{=}CHOCOR_3$, wherein R_1 is selected from hydrogen and methyl and R_2 and R_3 are individually selected from alkyl of 10 to 18 carbon atoms, and (3) from 0–22 mole percent of another copolymerizable monomer, and (B) from 90 to 40 weight percent of a silicone polymer of the formula:

$$R_6O\left[\begin{array}{c} R_5 \\ | \\ Si-O \\ | \\ R_4 \end{array}\right]_n R_6$$

wherein R_4 is selected from alkyl of 1–3 carbon atoms, alkenyl of 2–3 carbon atoms, and aryl of 1–2 carbocyclic rings; R_5 is

selected from hydrogen and R_4; R_6 is selected from hydrogen and



wherein R_7 and R_8 are individually alkyl of 1–3 carbon atoms, R_9 is selected from hydrogen and R_7, and n is an integer so as to provide a polymer of molecular weight in the range of 10,000 and 100,000, the percentages of said (A) and said (B) totaling 100 percent and being based on the total weight of said (A) and said (B) in said medium, said treating being carried out in a manner such as to deposit upon said fibers from about 0.2 to 5 percent, by weight, based on the weight of said fibers, of the mixture of (A) and (B), and thereafter removing said medium from said fibers.

3,844,826

DRESSING SEWING THREAD TO REDUCED FRICTION

Werner Buchner, Leichlingen; Walter Noll, Opladen; Friedrich Reich, Leverkusen; Wilfried Kortmann, Hohenlimburg, and Josef Pfeiffer, Opladen-Quettingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

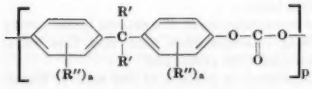
Filed Dec. 7, 1972, Ser. No. 313,075

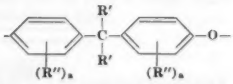
Claims priority, application Germany, Dec. 16, 1971, 2162417

Int. Cl. D06m *15/66;* **C10m** *3/44*

U.S. Cl. 117—138.8 F **5 Claims**

1. A low-friction sewing thread dressed with a polycarbonate-polydimethylsiloxane block copolymer comprising about 8 to 35 percent by weight of polycarbonate segments of the formula





in which

each R′ independently is a hydrogen atom or a monovalent aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical with 1 to 12 carbon atoms,

each R″ independently is a lower alkyl radical or a halogen atom,

p is an integer from 1 to 7 and

a is an integer from 0 to 4,

and about 65 to 92 percent by weight of polydimethylsiloxane segments having an average chain length of about 15 to 90 dimethylsiloxane units.

3,844,827

PROCESS FOR MODIFYING FIBROUS SUBSTRATES WITH FLUORINATED TERPOLYMERS

William L. Wasley, Berkeley, and Allen G. Pittmann, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 271,894, July 14, 1972, Pat. No. 3,773,728, which is a division of Ser. No. 117,777, Feb. 22, 1971, Pat. No. 3,706,594. This application Jan. 10, 1973, Ser. No. 322,588

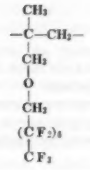
Int. Cl. C08j *1/44*

U.S. Cl. 117—139.5 A **2 Claims**

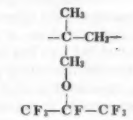
1. A process for modifying a fibrous substrate, which comprises:

I. depositing on the fibrous substrate an addition terpolymer which contains -

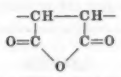
a. recurring units of the structure



b. recurring units of the structure



c. and recurring units of the structure



the aforesaid units *a*, *b*, and *c* being in a molar ratio of 1:1:2;

II. the said terpolymer being deposited as a dispersion in a volatile liquid carrier; and

III. curing the so-treated fibrous substrate by heating it at a temperature about from 50° to 150° C.

3,844,828

METHOD OF TREATING CLAY TO IMPROVE OPTICAL PROPERTIES OF PAPER

David B. Kirby, Midland, and Roger D. Kroening, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 115,114, Feb. 12, 1971, Pat. No. 3,753,753. This application Jan. 2, 1973, Ser. No. 320,001

Int. Cl. D21h *1/10*

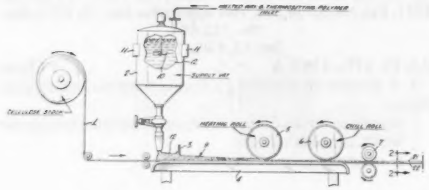
U.S. Cl. 117—152 **13 Claims**

1. A method to improve the optical properties of paper comprising coating paper with aged kaolin produced by forming an aqueous mixture of kaolin and from about 0.5 to about 25 weight percent magnesium oxide based on the total weight of kaolin and magnesium oxide; and then drying the coating.

3,844,829
METHOD OF PREPARING THERMOSET POLYMER COATED-WAX IMPREGNATED CELLULOSIC STOCK

Ernest P. Black, West Chester, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed Jan. 22, 1973, Ser. No. 325,265
Int. Cl. D21h *1/36*
U.S. Cl. 117—155 L **10 Claims**



1. Method of preparing an article comprising a wax-impregnated porous cellulosic stock having a thermoset polymer coating, which comprises:

a. establishing a heterogeneous composite of solid particles of the thermosetting polymer in finely divided form and molten wax, said particles having the following properties:

1. a conversion temperature between the melting point of the wax and the degradation temperature of the substrate;

2. substantial insolubility in the molten wax at a temperature below the conversion temperature of the polymer;

b. applying a coating of said heterogeneous composite to a porous cellulosic substrate at a temperature above the melting point of the wax but below the conversion temperature of the thermosetting polymer; the amount of coating being regulated so that at least most of the wax therein is adsorbable in cellulosic substrate;

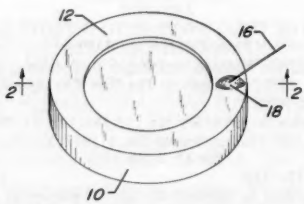
c. heating said particles to a temperature between the conversion temperature of the thermosetting polymer and the degradation temperature of the substrate and applying pressure thereto to form a continuous thermoset polymer layer on the surface of the porous substrate;

d. and thereafter cooling the resultant article.

3,844,830
SINTERING PROCESS FOR METALLIZING NON-METAL SUBSTRATES

David H. Spielberg, Schaumburg; Kenneth R. Janowski, Wheaton, and Charles J. Levesque, Hoffman Estates, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 27, 1972, Ser. No. 319,095
Int. Cl. C03c *17/06*
U.S. Cl. 117—160 R **11 Claims**



1. Method of metallizing at least a portion of the surface of a non-metallic substrate with a firmly adherent coating of a metallizing material selected from the group consisting of a metal, metal alloy or metal oxide thereof, comprising the steps of:

applying a coating of the metallizing material to the surface of the non-metallic substrate;

heating the composite so formed in a furnace at a temperature less than the standard sintering temperature of said coating and less than 1,100°C;

repeatedly changing the atmosphere in said furnace from an oxidizing nature to a reducing nature while maintaining said temperature so as to alternately oxidize and reduce the surface of said coating, said metallizing material and said non-metallic substrate being selected such that said metallizing material is one which will undergo surface oxidation and reduction at said temperature in said furnace while said non-metallic substrate will not.

3,844,831
FORMING A COMPACT MULTILEVEL INTERCONNECTION METALLURGY SYSTEM FOR SEMI-CONDUCTOR DEVICES

Eugene E. Cass, Hopewell Junction; William A. Enichen, Wappingers Falls, and Janos Havas, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,570
Int. Cl. B44d *1/18*; **B32b** *31/14*
U.S. Cl. 117—212 **14 Claims**

1. A method of fabricating a multi-level interconnection metallurgy system for an integrated semiconductor device comprising

forming a first dielectric layer on the surface of a semiconductor substrate,

forming a first layer of first metal on said first dielectric layer,

forming a first metallurgy interconnection pattern having uniform width stripes in the first layer of metal by selective removal of portions thereof,

depositing a second dielectric layer over the first metallurgy layer of said first dielectric layer, said second dielectric layer of a material dissimilar from said first dielectric layer,

forming via holes in said second dielectric layer of a diameter substantially equal to or larger than the width of the underlying conductive lines of the first metallurgy pattern using an etchant that is selective to the material of the second dielectric layer,

forming a second metallurgy layer of a second metal having dissimilar etching characteristics than said first metal over the second dielectric layer, and

forming an interconnection pattern in the second metallurgy layer with uniform width lines over the via holes using an etchant selective to said second metal.

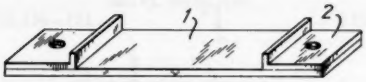
3,844,832
METHOD OF MANUFACTURING A HYDROSENSITIVE ELEMENT FOR A HUMIDITY SENSITIVE DEVICE

Pavel Stepanovich Gabrusenok, Sadovaya ul. 24, kv. 12, Leningrad, U.S.S.R.

Continuation-in-part of Ser. No. 160,699, July 8, 1971, abandoned, which is a division of Ser. No. 776,969, Nov. 19, 1968, Pat. No. 3,712,860. This application May 14, 1973, Ser. No. 360,167
Int. Cl. B44d *1/18*
U.S. Cl. 117—219 **9 Claims**

1. A method of manufacturing a hydrosensitive element comprising pulling a flexible strip in the form of a dielectric film continuously at a uniform speed through a solution of gelatin for producing on the film a uniform gelatin layer,

impregnating the gelatin layer with an aqueous solution consisting of a hygroscopic salt and a tanning component such



that the salt is distributed uniformly in the gelatin layer, drying the coating, exposing the coating to light for tanning the gelatin and cutting the strip into separate film elements.

3,844,833

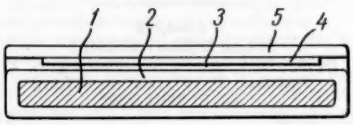
METHOD OF MANUFACTURE OF NUCLEAR RADIATION SOURCES

Lidia Emelianovna Drabkina, Leningradskoi oblasti, ul. Gagarina, 11, kv. 18, Gatchina; Jury Vatslavovich Mazurek, 2 Murinsky proezd, 44, kv. 145, Leningrad; Dmitry Nikolaevich Myasoedov, 10 Linia V. O., 23, kv. 11, Leningrad; Viktor Pavlovich Prokhorov, Shishmarevsky, per., 16, kv. 1, Leningrad; Vladimir Alexandrovich Kachalov, 2 Murinsky proezd, 44, kv. 26, Leningrad, all of U.S.S.R.; David Moiseevich Ziv, deceased, late of Leningrad, U.S.S.R., and Valentia Spiridonovna Ziv, administratrix, 2 Murinsky proezd, 44, kv. 153, Leningrad, U.S.S.R.

Division of Ser. No. 765,274, Oct. 2, 1968, abandoned. This application Feb. 15, 1972, Ser. No. 226,541

Int. Cl. G21c *3/20*

U.S. Cl. 117—220 **5 Claims**



1. A method of manufacturing a radioactive source, comprising applying a radioactive material onto a substrate; heating said radioactive material and said substrate to form a radioactive layer applied to said substrate; heating the radioactive layer applied to said substrate; and hydrolyzing a metal chloride by vapor phase hydrolysis to form a metal oxide sealing layer on the heated radioactive layer.

3,844,834

HIGH TEMPERATURE-STABLE ABRASION-RESISTANT COATINGS FOR CONDUCTORS

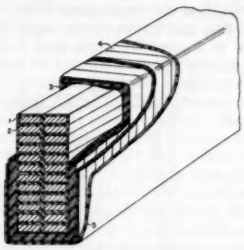
Donald D. Jerson, Mt. Pleasant, and Herbert F. Minter, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 17, 1972, Ser. No. 244,524

Int. Cl. H01b *7/28*

U.S. Cl. 117—226 **12 Claims**

1. An insulated conductor for a motor or generator to be cooled with air containing abrasive particles comprising at least one metal bar covered with electrically non-conductive insulation which is coated with a cured acrylic rubber composition which comprises a filler, a curing system, and a copolymer having a molecular weight of at least about 100,000 polymerized from monomers about 50 to 95 percent selected from the group consisting of esters of acrylic acid, methacrylic



acid, and mixtures thereof, and about 5 to 50 percent vinyl monomers co-reactive with said esters and having only one double bond.

3,844,835

USE OF LIME IN SUCRATE - FACTORY

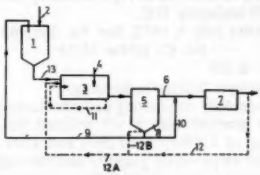
Georges F. M. F. Duchateau, Tienen, and Romain G. E. Vandewijer, Kumtich-Vissenaken, both of Belgium, assignors to Raffinerie tirlemontoise, Brussels, Belgium

Filed Nov. 15, 1972, Ser. No. 306,785

Claims priority, application Belgium, Nov. 19, 1971, 775564; Nov. 7, 1972, 791033

Int. Cl. C13j *1/04*

U.S. Cl. 127—47 **11 Claims**



1. In the process for cold treatment of sugar-factory molasses wherein precipitation of a saccharose-lime combination is accomplished by the addition of quicklime to molasses diluted to more than 6 percent of saccharose and the precipitated molasses is filtered, the improvement which comprises decanting the precipitated molasses prior to filtration and directly recirculating a portion of the decantation product to additional diluted molasses before adding the quicklime thereto.

3,844,836

METHOD FOR WASHING VEHICLES WITH OSCILLATING, FLEXIBLE STRIPS

Jerome M. Lesser, 713 Parkway, Fultondale, Ala. 35068

No Drawing. Division of Ser. No. 139,151, April 30, 1971, Pat. No. 3,765,043. This application Aug. 2, 1973, Ser. No. 385,040

Int. Cl. B08b *1/02*

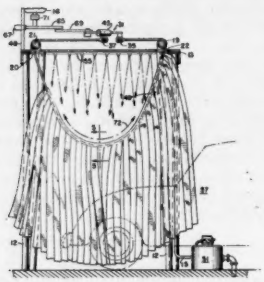
U.S. Cl. 134—6 **2 Claims**

1. A method of washing a vehicle comprising the steps of:

applying a aqueous cleaning solution to the vehicle,

passing a plurality of flexible water absorbent strips over said vehicle with a back and forth motion along the longitudinal dimension of said vehicle, and

oscillating said flexible strips up and down as said strips pass back and forth over said car, a portion of said flexible strips being raised while another portion is being lowered during said oscillation and all said strips describing like



paths of motion such that at the end of each stroke of the oscillation a vigorous snapping action of the strips is produced to coact with the cleaning solution and thereby wash the vehicle.

3,844,837

NONAQUEOUS BATTERY

Douglas N. Bennion, Sepulveda, Calif.; John S. Dunning, Sterling Heights, Mich.; William H. Tiedemann, Cedarburg, Wis., and Limin Hsueh, Lexington, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 7, 1972, Ser. No. 269,902
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 LN **5 Claims**

1. A nonaqueous battery comprising,
a. an electronically conducting cathode formed by reacting pyrolytic graphite with a salt selected from the group consisting of $LiClO_4$, $LiCF_3SO_3$ and $LiBF_4$ to form a compound of pyrolytic graphite and the negative ion of said salt;
b. a lithium anode; and
c. an electrolyte solution made up by dissolving a salt selected from the group consisting of $LiClO_4$, $LiCF_3SO_3$, and $LiBF_4$ in a solvent selected from the group consisting of dimethyl sulfite and propylene carbonate.

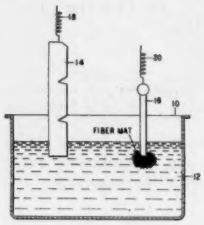
3,844,838

ALKALINE CELLS WITH ANODES MADE FROM ZINC FIBERS AND NEEDLES

Demetrois V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 25,490, April 3, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 233,951
Int. Cl. H01m *41/00*
U.S. Cl. 136—30 **9 Claims**

1. An alkaline galvanic cell having an anode, a cathode and an alkaline electrolyte in contact therewith, said anode comprising a porous, electrolyte absorbent, cohesive, self-supporting body of intermingled and interlocked zinc filaments characterized by having a thin elongated central spine portion with at least a few polydirectional side growths of granular, dendritic or platelet form, the thin elongated central spine portion consisting essentially of one or more single crystals perferentially orientated with an *a* axis parallel to the axis of the filament, said filaments having a length of from about ⅛ to about 4 inches, an average diameter of about 0.006



inch, and a specific surface area of between about 0.4 and 0.6 square meter per gram, said filaments being further characterized in that they are stable and nonpyrophoric.

3,844,839

FUEL CELL ELECTRODE

John Perry, Jr., New Shrewsbury, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 11, 1972, Ser. No. 296,686
Int. Cl. H01m *27/10, 27/30*
U.S. Cl. 136—86 D **1 Claim**

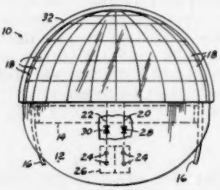
1. A hydrazine-air electrochemical cell in which the amount of ammonia generated is reduced when the cell is operating, said electrochemical cell including an approximate 60 percent porous iron plaque impregnated with about 3 milligrams per square centimeter of palladium black as the anode, an air cathode, and an anolyte for the electrodes, said anolyte comprising a solution of 2 molar hydrazine in 5 molar potassium hydroxide.

3,844,840

SOLAR ENERGY HELMET

Ray C. Bender, 2626 Norwood Ave., Pittsburg, Pa. 15214

Filed Sept. 27, 1973, Ser. No. 401,518
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **2 Claims**

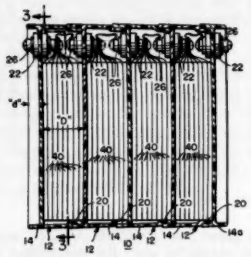


1. In a cycle helmet having a substantially hemispherical top portion and a depending rearward neck portion, the improvement comprising:
a plurality of juxtaposed solar cells overlying said hemispherical top portion;
a junction plate secured to said neck portion;
a circuit comprising wiring connecting said solar cells with said junction plate; and,
a protective coating of transparent material overlying said solar cells.

3,844,841
MODULAR BATTERY CONSTRUCTION

Bernard Baker, Brookfield, Conn., assignor to Energy Research Corporation, Bethel, Conn.

Filed Dec. 29, 1972, Ser. No. 319,913
Int. Cl. H01m 1/02
U.S. Cl. 136—111 **8 Claims**



1. A modular battery comprising:

a. a plurality of stacks of thin flat cells, each cell having a positive and a negative electrode plate and a thin sheet member containing an electrolyte disposed between such electrode plates;

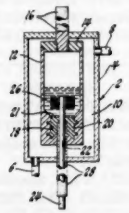
b. a plurality of nestable means for defining an outermost casing for said battery and for separately containing said cell stacks, each said nestable means comprising an end wall of wall area larger than the area of any one of said cell plates and sheet members and sidewalls supported on each edge of said end wall and extending beyond both sides thereof, the sidewalls of adjacent of said nestable means being engageable and thereupon defining with the end walls of said adjacent nestable means separate adjacent containers for said cell stacks, said end walls each defining an aperture therethrough, the end wall apertures of adjacent of said nestable means being axially aligned upon such engagement of said sidewalls; and

c. pressure sensitive probe means for monitoring the gas pressures in said separate cell stack-containers comprising hollow tube means extending through said end wall apertures for defining pressure-sensing openings extending from said hollow tube means into each of said separate containers.

3,844,842
INSULATING SEAL FOR MOLTEN SALT BATTERY

Ram A. Sharma, Sterling Heights, and James F. Rhodes, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1972, Ser. No. 309,961
Int. Cl. H01m 1/02
U.S. Cl. 136—133 **1 Claim**

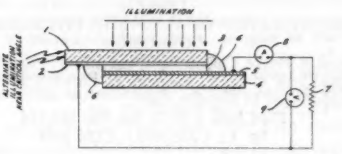


1. In a high temperature electrochemical cell, having a chamber containing electrolyte, an electrode for one of the cell's reactants contacting said electrolyte, a counterelectrode for another of the cell's reactants contacting said electrolyte and spaced apart from said electrode through said electrolyte, and an electrolyte-tight insulating seal electrically isolating said electrode from said counterelectrode and defining part of said chamber, the improvement comprising: said seal consisting essentially of at least about 15 percent by weight solid lithium fluoride and the balance a low thermal expansion filler selected from the group consisting of aluminum nitride, lanthanum oxide, yttrium oxide, calcium zirconate and lithium aluminate for mitigating the effects of lithium fluoride's thermal expansion properties and resisting the formation of salts with the cell's reactants which form low melting binary salts with lithium fluoride; and said electrolyte comprising a mixture of lithium fluoride and a salt which when fused ionically conducts the cell's current, wherein the lithium fluoride present in the electrolyte is sufficient to substantially saturate the fused salt and the fused salt has a decomposition potential less than said lithium fluoride.

3,844,843
SOLAR CELL WITH ORGANIC SEMICONDUCTOR CONTAINED IN A GEL

Robert E. Kay, Newport Beach, and Earle R. Walwick, Irvine, both of Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Jan. 2, 1973, Ser. No. 320,099
Int. Cl. H01l 15/02
U.S. Cl. 136—206 **10 Claims**



1. An improved photovoltaic cell structure having an organic semiconductor active material located between conductive electrodes, at least one of which is transparent, wherein said improvement comprises:

an active material including an organic semiconductor contained in a gel.

3,844,844
HIGH TOUGHNESS IRON BALLS AND PROCESS OF MAKING THE SAME

Yuichiro Sato, Toyama, Japan, assignor to Taiheiyo Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,270
Claims priority, application Japan, Mar. 6, 1972, 47-22235
Int. Cl. C21d 7/14, 9/36; C22c 37/00
U.S. Cl. 148—2 **2 Claims**

1. A process of making high toughness iron balls which comprises casting hypo-eutectic pig iron into a white cast iron bar, subjecting, after heating, the white cast iron bar to hot plastic deformation working at a temperature of 900°C. to 1,125°C. to form white cast iron balls having a structure in which the eutectic cementite network is converted to fine eutectic cementite uniformly and concentric-spherically dispersed throughout the pearlitic matrix of the ball, rapid cooling the balls, and then tempering the balls at a temperature below the A_{e1} point of the cast iron or annealing the balls at a temperature of 150°C. to 250°C.

3,844,845

DIRECTIONAL COMPOSITES BY SOLID-STATE UP-TRANSFORMATION

James D. Livingston, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,254
Int. Cl. C22c 19/00, 39/20
U.S. Cl. 148—2 2 Claims

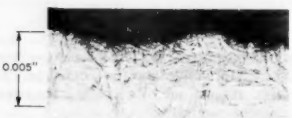
1. A process for producing a solid composite of at least two different metal phases with one phase in the form of substantially uniform parallel lamellae, rods or fibers passing through a matrix of the second or other phases which comprises providing an alloy which forms at an elevated temperature a single solid phase that precipitates a second solid phase when cooled through a solvus temperature, said alloy having a precipitation temperature that varies with velocity of motion down a temperature gradient, heating said alloy to a temperature above the said solvus temperature to form said single solid phase, quenching the resulting single phase alloy to retain said phase at about room temperature, unidirectionally raising the temperature of the resulting quenched single solid phase alloy through a thermal gradient of at least 50°C per cm. at a velocity of transformation which on reaching transformation temperature directionally transforms said quenched solid to produce an aligned solid composite of at least two phases wherein one of said phases is aligned in the form of substantially uniform lamellae, fibers or rods substantially parallel to each other and to the thermal gradient, said transformation temperature being a minimum of 20°C below said precipitation temperature when said velocities are equivalent in the range from a minimum velocity up to 75 percent of the maximum velocity of transformation to produce said aligned solid composite.

3,844,846

DESENSITIZATION OF ALLOYS TO INTERGRANULAR CORROSION

Warren H. Friske, Canoga Park, and John P. Page, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed June 1, 1973, Ser. No. 366,224
Int. Cl. C22c 39/22; C21d 7/06
U.S. Cl. 148—11.5 R 7 Claims



1. The method of desensitizing an alloy susceptible to intergranular corrosion following exposure to a sensitizing temperature which comprises severely shot peening a surface of the alloy with sufficient intensity so as to break up the grain structure and eliminate continuous grain boundaries thereof prior to exposure of said alloy to said sensitizing temperature.

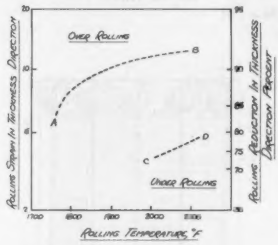
3,844,847

THERMOMECHANICAL PROCESSING OF MECHANICALLY ALLOYED MATERIALS

Michael James Bomford, Bublikon, Switzerland, and Robert Lacock Cairns, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Sept. 11, 1973, Ser. No. 396,203
Int. Cl. B22f 3/18
U.S. Cl. 148—11.5 F 8 Claims

1. A process for producing flat mill products from mechanically alloyed composite powder particles which comprises compacting the composite particles at a temperature within the range of about 1,700°F. to 2,100°F., hot rolling the compacted body at a temperature above the recrystallization temperature of the alloy but below about 2,050°F. and at a



strain of from about 3 to about 40 in/in/sec, and continuing the hot rolling operation until the percentage reduction in thickness of the compacted body is at least 75 percent and up to 97 percent.

3,844,848

PRODUCTION OF LOW ALLOY STEEL WIRE

Andrew Gordon Stacey, Norton, near Doncaster, England, assignor to British Ropes Limited, Doncaster, England

Filed Nov. 15, 1973, Ser. No. 416,203
Claims priority, application Great Britain, Nov. 15, 1972, 52805/72
Int. Cl. C21d 9/52
U.S. Cl. 148—12 B 5 Claims

1. A method of producing low alloy steel wire from low alloy steel rod, the method comprising heat treating the rod to produce a pearlite structure; cold drawing the rod to initiate work hardening and thereby raise the tensile strength; drawing the part-drawn rod through a drawing die to reduce the cross-sectional area by between 10 and 40 percent; heating the wire leaving the die to 300°–450°C; and forcibly cooling the wire.

3,844,849

NICKEL-IRON MAGNETIC ALLOYS COMPRISING CHROMIUM AND MOLYBDENUM

Nobukazu Kuroda, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 19, 1973, Ser. No. 325,144
Claims priority, application Japan, Jan. 27, 1972, 47-010146
Int. Cl. C04b 35/00
U.S. Cl. 148—31.55 4 Claims

1. A magnetically heat-treated alloy consisting essentially of iron, nickel, about 6 to about 12 weight percent chromium, and about 0.5 to about 8 weight percent molybdenum wherein a weight ratio of nickel to iron is in the range of about 0.54 to about 1.5, said alloy being characterized as having an initial permeability greater than 3,000, a magnetic flux density greater than 3,000 Gausses, a coercive force less than 0.1 and a rust-forming rate less than about 0.01.

3,844,850

LARGE GRAIN COBALT-SAMARIUM INTERMETALLIC PERMANENT MAGNET MATERIAL AND PROCESS

Mark G. Benz, Burnt Hills, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,424
Int. Cl. H01f 1/02
U.S. Cl. 148—103 13 Claims

1. A process for preparing large single crystal free grains of cobalt-samarium alloy having useful permanent magnet properties which comprises forming an alloy melt of cobalt and

samarium wherein the samarium content ranges from about 34 to 38 percent by weight of said alloy, cooling said alloy melt at a rate sufficiently slow to produce a solid cast body wherein the cast grains have a size ranging from about 100 microns to 1000 microns, said cast grains being single crystal grains, annealing said solid cast body in an atmosphere in which it is substantially inert at a temperature ranging from 900°C to 1200°C for a period of time ranging from about 5 minutes to 24 hours, and comminuting said annealed cast body to produce free grains having a size corresponding to or smaller than the size of said cast grains, recovering said free grains ranging in size from about 50 to 200 microns with at least 85 percent by weight of said recovered free grains being single crystal free grains, said annealing being carried out so that said resulting recovered free grains have the property of showing at room temperature after being magnetized to at least within about 10 percent of full saturation magnetization a relative magnetization value $4\pi J/B_r$ of at least 50 percent at a demagnetizing field of −4 kilooersteds.

3,844,851

PRE-FITTING METHOD OF MANUFACTURING COBALT SAMARIUM PERMANENT MAGNET ALLOY

Jean-Paul Haberer, Saint Martin d'Heres, France, assignor to Societe d'Etudes et de Recherches Magnetiques (SERMAG), Saint Martin d'Heres, France

Filed Apr. 19, 1973, Ser. No. 352,695
Claims priority, application France, May 2, 1972, 72.15499
Int. Cl. H01f *1/02*
U.S. Cl. 148—103 **4 Claims**

1. In a process of manufacturing a permanent magnet material based on samarium and cobalt, comprising the steps of: (a) preparing a powder of an alloy of samarium and cobalt, having a samarium content between 35 and 42 percent by weight and a cobalt content of between 65 and 58 percent by weight; (b) compacting the powder formed in step (a) under high pressure, while concurrently applying to the compact a magnetic field orienting the magnetic particles in the alloy; (c) sintering the compressed powder in an inert atmosphere; and (d) annealing the sintered compressed powder, the improvement comprising intermediate compacting step (b) and sintering step (c), the additional step of pre-fritting the compacted body of step (b) at a temperature of between 600° and 1000° C for a period of between 2 and 60 minutes to increase the density and residual induction properties of the final product.

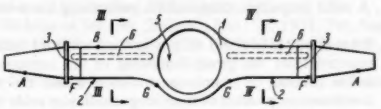
3,844,852

METHOD OF HEAT TREATMENT OF HOUSINGS

Leonid Avrelievich Krendel, ulitsa Gagarina 24, kv. 14, Serdobsk Penzenskoi oblasti; Vladimir Filippovich Nikonov, ulitsa Avtozavodskaya 11/1, kv. 125, Moscow; Viktor Alexeevich Ognevsky, ulitsa Krasnogo Mayaka, 8, korpus 1, kv. 22, Moscow; Anatoly Georgievich Orlovsky, ulitsa Simferopolskaya, 14/2, kv. 21, Moscow; Grigory Arkadievich Ostrovsky, Dimitrovskoe shosse, 41, kv. 125, Moscow; Valery Evseevich Palkin, Samarkandsky bulvar 6, korpus 2, kv. 190, Moscow; Anatoly Vladimirovich Pakhomov, ulitsa Verkhnyaya Maslovka 28, kv. 10, Moscow; Anatoly Loginovich Stepin, ulitsa Birjulevskaya, 1, korpus 2, kv. 347, Moscow; Oleg Fedorovich Trofimov, ulitsa Chusovskaya 11, korpus 8, kv. 92, Moscow; Konstantin Zakharovich Shepelyakovsky, ulitsa Avtozavodskaya, 6, kv. 125, Moscow; Alexandr Moiseevich Ryskind, ulitsa Kirovogradskaya, 24, korpus 1, kv. 161, Moscow; Isaak Nakhimovich Shklyarov, ulitsa Velozavodskaya, 9, kv. 24, Moscow; Moisei Osipovich Rabin, Simonovsky val, korpus 1, kv. 119, Moscow; Veniamin Davydovich Kalner, Lomonosovsky prospekt, 15, kv. 137, Moscow, and Mikhail Mironovich Fishkis, Zvezdny bulvar, 5, kv. 28, Moscow, all of U.S.S.R.

Filed Dec. 27, 1972, Ser. No. 319,044
Int. Cl. C21d *1/10, 1/42*
U.S. Cl. 148—134 **3 Claims**

1. A method of heat treatment of automobile driving axle housings subjected to asymmetric cyclic loads which comprises heating the housing side wall zones adjacent to spring pads to a temperature of 800° to 1250°C at a height of from 0.4 to 0.7 of the housing height from the housing lower wall, said zones having a length of from 1 to 4 times the housing height near said spring pads and a height of from 0.2 to 0.5 of said housing height near the spring pads, said zones of the



housing side walls being heated at said temperature for not more than 180 seconds wherein the zones of said lower wall of the housing carrying maximum tensile stresses are heated by conduction to a temperature of not above 300°C, and cooling the housing in air for at least 180 sec.

3,844,853

NON-SOLVATED ALUMINUM HYDRIDE COATED WITH STABILIZER

Norman E. Matzek, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 290,880, June 21, 1963, abandoned. This application July 28, 1965, Ser. No. 476,780
Int. Cl. C06b *19/02*
U.S. Cl. 149—5 **2 Claims**

1. A substantially non-solvated aluminum hydride having an enhanced thermal stability which comprises;

a substantially non-solvated aluminum hydride having a surface coating of from about a few hundredths of a per cent to about 1 per cent on the weight of said aluminum hydride of a member selected from the group consisting of nitrogen oxide (NO), N_2F_4, oxygen, carbon dioxide, volatile inorganic chlorides, volatile inorganic sulfides, triethylene glycol dinitrate and carbon tetrachloride.

3,844,854

STABILIZATION OF LIGHT METAL HYDRIDE

James M. Self, Wilmington, Del., and Norman E. Matzek, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 20, 1967, Ser. No. 670,022
Int. Cl. C06b *15/00*
U.S. Cl. 149—6 **4 Claims**

1. A substantially non-solvated, crystalline, aluminum hydride having an enhanced thermal stability which comprises; a substantially non-solvated aluminum hydride having a surface coating of a member selected from the group consisting of diphenyl acetylene, cis- and trans-stilbene, symmetrical diethyldiphenylurea, dinitro-stilbene, diaminostilbene, (anilinophenyl)phenylhydrazine, nitrophenylaniline, azobenzene, tetraphenyl hydrazine, α-anilino, β-phenylbenzamide stilbene, N,N'-carbonyl diquinoline, and benzene dicarbonitrile.

3,844,855

SOLID COMPOSITE PROPELLANT WITH AUTOCONDENSATION PRODUCT OF TRIAMINOGUANIDINIUM AZIDE AS BINDER

John J. Plomer; Harold E. Filter, and George A. Lane, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 19, 1966, Ser. No. 589,183
Int. Cl. C06d 5/06
U.S. Cl. 149—19.1 4 Claims

1. A solid propellant composition comprising on a weight basis

a. from about 5 to about 60 per cent of a binder member selected from the group consisting of the autocondensation product of triaminoguanidinium azide, the autocondensation product of triaminoguanidinium azide modified with from about 2 to about 20 weight per cent malononitrile, the autocondensation product of triaminoguanidinium azide modified with from about 2 to about 20 weight per cent cyanamide and mixtures thereof,

b. from about 3 to about 65 weight per cent of a particulated solid fuel, and

c. balance a particulated solid oxidizer.

3,844,856

NITROCELLULOSE PROPELLANT COMPOSITION CONTAINING ALUMINUM HYDRIDE

James P. Flynn; George A. Lane, and John J. Plomer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 16, 1965, Ser. No. 465,251
Int. Cl. C06d 5/06
U.S. Cl. 149—19.8 4 Claims

1. A solid double-base propellant composition comprising on a weight basis

a. from about 5 to about 40 percent of a crystalline substantially non-solvated aluminum hydride,

b. from about 18 to about 39 percent ammonium perchlorate, and

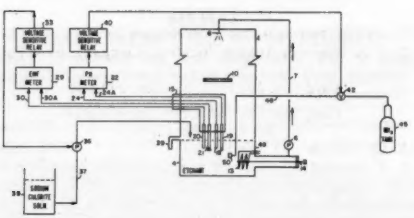
c. from about 30 to about 60 percent of a plasticized nitrocellulose binder.

3,844,857

AUTOMATIC PROCESS OF ETCHING COPPER CIRCUITS WITH AN AQUEOUS AMMONIACAL SOLUTION CONTAINING A SALT OF A CHLOROXY ACID

John Shu-Chi Chiang, Mercerville, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,866
Int. Cl. C23f 1/02
U.S. Cl. 156—8 4 Claims



1. A method for the selective and continuous dissolution of copper comprising

a. providing an etchant solution consisting essentially of water, from about 0.001 to 0.1 mole/liter of an alkali metal or ammonium salt of a chloroxy acid, from about 0.4 mole/liter to limit of solubility of cupric amine chloride, an ammonium salt buffer and sufficient ammonia to produce a pH range of about 8–12;

b. contacting a copper coated substrate with said etchant solution for a period sufficient to dissolve the desired amount of copper therefrom;

c. controlling the pH of the etchant by feeding the signal from a pair of electrodes immersed in the etchant solution to a pH meter, the output of which is connected to a voltage sensitive relay which turns on a pump or a valve when the pH falls below a predetermined set point within the pH range thereby introducing ammonia into the etchant until the pH exceeds the predetermined set point at which point the relay turns off the pump or valve;

d. controlling the chloroxy acid salt concentration, by feeding the EMF signal developed between a platinum and a reference electrode in the etchant solution to a voltage sensitive relay which turns on a pump or valve when the EMF falls below a predetermined set point within the range of 50–250 millivolts thereby introducing chloroxy acid salt solution into the etchant until the EMF exceeds the predetermined set point at which time the relay turns off the pump or valve thereby maintaining the etchant in an oxidizing condition and the level of chloroxy acid salt not exceeding about 0.1 moles per liter;

e. retaining the workpiece in the etchant until the copper has been etched out; and

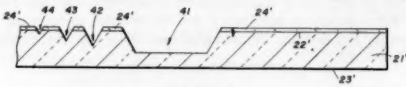
f. removing the etched workpiece from the etching solution.

3,844,858

PROCESS FOR CONTROLLING THE THICKNESS OF A THIN LAYER OF SEMICONDUCTOR MATERIAL AND SEMICONDUCTOR SUBSTRATE

Kenneth E. Bean, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1968, Ser. No. 788,167
Int. Cl. H01l 7/50
U.S. Cl. 156—17 14 Claims



1. A method for thinning a semiconductor slice to a precisely controlled thickness comprising the steps of:

forming a plurality of slots in one surface of said slice, said slots having a precisely known depth equal to or greater than the desired thickness of said slice;

removing material from the opposite surface of said slice until at least a portion of at least one of said slots is exposed; and

interrupting said removal of semiconductor material based upon the exposure of said slots as an indication of the thickness of the semiconductor slice.

3,844,859

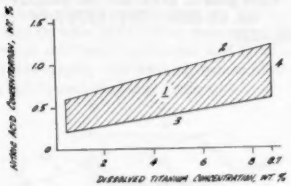
TITANIUM CHEMICAL MILLING ETCHANT

Jack C. Roni, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 885,598, Dec. 16, 1969, abandoned. This application June 20, 1972, Ser. No. 264,594
Int. Cl. C23f 1/00
U.S. Cl. 156—18 2 Claims

1. A method of chemical milling titanium to remove metal from the horizontal and vertical surfaces of the titanium at essentially the same uniform rate, the steps comprising:

a. immersing the titanium in an aqueous etching fluid containing a concentration of hydrofluoric acid sufficient to effect an etch rate on titanium of from about 0.0004 to 0.0015 inches per side per minute, a surface active agent selected of materials consisting essentially of dodecylbenzene sulfonic acid and linear alkyl sulfonic acid in amounts sufficient to control surface tension of the etching solution at from about 28 to 60 dynes per cm., and about 0.2 weight percent of nitric acid, said aqueous



etching fluid uniformly removes titanium metal which when removed goes into solution in the etching fluid;

b. varying the nitric acid concentration in the etchant as the dissolved titanium concentration increases such that the nitric acid concentration increases from 0.2 to about 1.2 weight percent as the dissolved titanium weight percent in the solution increases up to about 8.7; and

c. holding the titanium in the etchant until the desired depth of cut is obtained.

3,844,860

METHOD OF MAKING AN ELECTRIC POWER CABLE

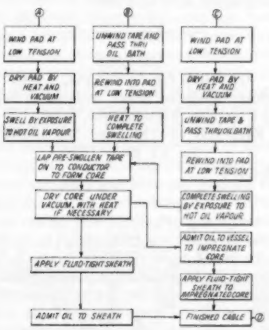
Derek Reginald Edwards, Windsor, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Mar. 29, 1972, Ser. No. 239,115

Claims priority, application Great Britain, Apr. 1, 1971, 8379/8380

Int. Cl. H01b *13/00*

U.S. Cl. 156—53 **7 Claims**


WIND PAD AT LOW TENSION
UNWIND TAPE AND PASS THRU DIS. BATH
WIND PAD AT LOW TENSION
DRY PAD BY HEAT AND VACUUM
REWIND INTO PAD AT LOW TENSION
DRY PAD BY HEAT AND VACUUM
SWELL BY EXPOSURE TO HOT OIL VAPOUR
HEAT TO COMPLETE SWELLING
UNWIND TAPE & PASS THRU OIL BATH
LAP PRE-SWOLLEN TAPE ON TO CONDUCTOR TO FORM CORE
REWIND INTO PAD AT LOW TENSION
DRY CORE UNDER VACUUM, WITH HEAT IF NECESSARY
COMPLETE SWELLING BY EXPOSURE TO HOT OIL VAPOUR
ADMIT OIL TO VESSEL TO IMPREGNATE CORE
APPLY FLUID TIGHT SHEATH
APPLY FLUID-TIGHT SHEATH TO IMPREGNATED CORE
ADMIT OIL TO SHEATH
FINISHED CABLE

1. A method of making an electric power cable core comprising the steps of lapping on to a conductor a plurality of electrically insulating tapes each comprising at least one layer of fibrous material and at least one polymeric layer, said polymeric layer containing an absorbed electrically insulating swelling agent that does not swell said fibrous material and impregnating the resultant dielectric body with an insulating liquid impregnant that swells the material of said polymeric layers but not said fibrous material, said swelling agent being selected to reduce the degree of swelling that occurs upon contact with the said liquid impregnant.

3,844,861

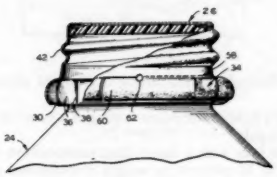
METHOD OF FORMING A CLOSURE CAP HAVING A HEAT SHRINKABLE TUBULAR ELEMENT THEREOVER

Edwin M. Irish, Jr., St. Davids, Pa., assignor to Gilbreth International Corporation, Philadelphia, Pa.

Division of Ser. No. 200,397, Nov. 19, 1971, Pat. No. 3,720,343. This application Dec. 19, 1972, Ser. No. 316,547

Int. Cl. B29c *27/14*

U.S. Cl. 156—69 **7 Claims**



1. The method of forming a closure cap for threaded neck plastic containers and the like including a laminated disc adapted to engage over and in sealing relationship with a container opening and a heat-shrinkable plastic tube comprising:

a. passing pre-coated aluminum foil over a coating roll and applying an adhesive on the reverse side of the foil;

b. electrically heating the foil to dry the applied adhesive and activate the coating adhesive;

c. joining the heated foil with a top sheet and a bottom sheet and applying pressure to the juxtaposed sheets to form a permanent composite laminated sheet;

d. cutting discs from said laminated sheet; and

e. placing a tube of heat-shrinkable plastic material over a disc of the laminate and applying heat to partially heat-shrink the tube into engagement with the disc partially extending over the top thereover and with a depending skirt adapted for heat-sealed engagement with and over the threaded neck of a container by further heat-shrinking subsequent to placement of the cap on a container.

3,844,862

A METHOD OF COATING FABRICS WITH POLYURETHANE

Richard W. Sauer, and Donald H. Russell, both of Cherry Hill, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,524

Int. Cl. B32b *5/18*

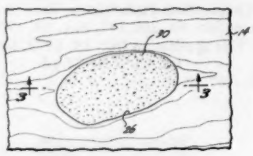
U.S. Cl. 156—78 **10 Claims**

1. A method for preparing a polyurethane coated fabric; comprising, coating a one-package cyclic nitrile carbonate/-polyol composition to a release surface, heating the coated release surface at a temperature sufficient to cause foaming and partial curing of the coating; placing a substrate fabric over the foamed and partially cured coating in direct contact with the coating; applying pressure to the fabric-covered coating sufficient to crush the foam and fuse the same into a continuous film; heating the resulting compressed laminate to a temperature sufficient to complete curing of said coating; and stripping the coated fabric from said release surface.

3,844,863
REPAIR OF WOODEN ARTICLES

David M. Forsythe, Clackamas, and William J. Runckel, Portland, both of Oreg., assignors to Publishers Paper Co., Oregon City, Oreg.

Continuation-in-part of Ser. No. 61,769, Aug. 6, 1970, Pat. No. 3,741,853. This application May 16, 1973, Ser. No. 360,810
Int. Cl. B32b *35/00*
U.S. Cl. 156—98 5 Claims

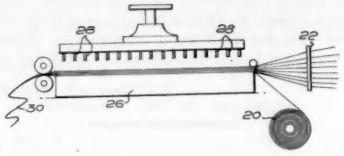


1. A method of manufacturing a repaired plywood panel comprising
   preparing a hole in the outer veneer of a panel in the region of the repair,
   filling said hole with a liquid filler composition comprising from 3 to 10 percent by weight comminuted cork, and
   permitting said filler composition to harden within said hole, with such accompanied with stratification resulting in the cork rising to form a layer adjacent the outer surface of the veneer having a substantially greater amount of cork than an underlying layer at the bottom of the hole, to produce a filled repaired region.

3,844,864
METHOD OF MAKING YARN SHADE CARDS

Richard Donovan Glover, 90 Kingsway, Ossett, Yorkshire, and John Adrian Nettleship, 3 The Crescent, Long Ln., Southowram, Yorkshire, both of England

Continuation-in-part of Ser. No. 131,729, April 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 772,949, Nov. 4, 1968, abandoned. This application Oct. 10, 1972, Ser. No. 295,846
Int. Cl. B32b *5/08, 31/18*
U.S. Cl. 156—178 1 Claim

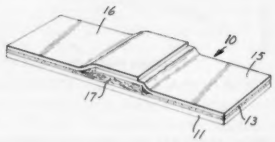


1. The method of making a plurality of identical yarn shade cards each card providing an array of colored yarns adhered to a backing sheet comprising:
   a. placing a number of individual fibrous yarns in side-by-side array parallel to one another across and on a backing sheet which is composed of synthetic thermoplastic material which becomes adhesive in response to heat;
   b. applying heat and pressure simultaneously along a plurality of spaced apart, parallel bonding lines which extend the length of said sheet, said bonding lines extending transversely to said array of yarns and across the same, the heat melting the thermoplastic material to fuse into and to anchor the fibers of the yarn along each said line to the backing sheet;
   c. thereafter cooling the shade card so that the melted thermplastic material sets along said bonding lines to thereby form a plurality of arrays of yarns bonded along said lines and fused onto said backing sheet; and,
   d. cutting one yarn shade card from said plurality along a line which is parallel to said bonding lines and thereby produce a plurality of separated shade cards.

3,844,865
METHOD OF MAKING STRETCH-ORIENTED POROUS FILMS

Robert L. Elton, White Bear, and John F. Vander Louw, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 6, 1972, Ser. No. 260,321
Int. Cl. B29c *17/02*; B32b *5/16*
U.S. Cl. 156—229 5 Claims

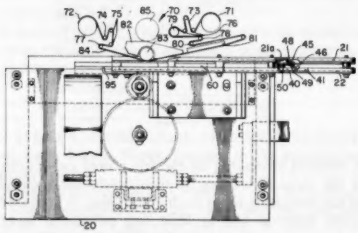


1. A process for making a porous structure comprising the steps of:
   a. dispersing particles of an inorganic pore nucleating agent less than 250 microns in size into a film-forming organic polyurethane polymer to form a filled polymer composition,
   b. heat-forming a film less than 80 mils in thickness from the filled polymer composition of step (a),
   c. stretch-orienting said film at least 1.5 times its original length along at least one axis of the film to provide a stretch-oriented film of reduced thickness and an area enlarged by a factor of at least 1.5, whereby said stretch-oriented film is provided with an interconnected network of voids and a moisture vapor transmission of at least 500 micrograms/cm² hr. for a relative humidity difference on opposite sides of said stretch-oriented film of no less than 100 percent/60 percent, and
   d. adhering said stretch-oriented film having said decreased thickness and enlarged area to a polymeric layer without any prior or subsequent removal of said inorganic pore nucleating agent from said film.

3,844,866
METHOD OF LABELING A LID

Fred J. Wochner, Holliston, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed July 15, 1970, Ser. No. 55,036
Int. Cl. B44c *1/00*
U.S. Cl. 156—238 1 Claim



1. A method for applying heat transfer labels to a lid which comprises the steps of (1) feeding at a feed station a lid apart

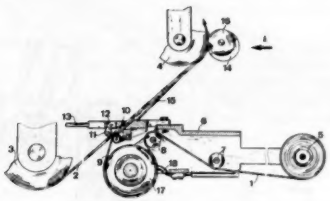
from its container to a transport means which includes a plate having a tapered cutout so that the lid rests in the cutout upright on its end with the top surface thereof in position for applying a label thereto at a label application station; (2) providing a backing means with said transport means to engage the end of the lid; (3) applying a heat transfer label to the top of the lid apart from its container at the label application station; (4) removing the lid apart from its container from the cutout at a discharge station; (5) reciprocating the transport means between said feed station, said application and said discharge station while maintaining the lid upright on its end within the cutout of said transport means; and (6) engaging the end of said lid with said backing means to support it as it travels between said feed station and said label application station and disengaging said backing means after said label station but before said discharge station.

3,844,867

PROCESS FOR HOT-WELDING A STRIP ON A FILM

Robert Regipa, Toulouse, France, assignor to Centre National D'Etudes Spatiales, Paris, France

Filed Mar. 13, 1972, Ser. No. 234,056
Claims priority, application France, Apr. 9, 1971, 71.12660
Int. Cl. B32b *31/18, 31/24*
U.S. Cl. 156—270 **2 Claims**



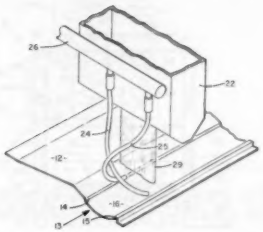
1. A process for hot-welding a strip to a film, said strip consisting of at least two superimposed layers, one layer being made of a hot-welding material having a specific fusion temperature and the other layer being a support material having a higher fusion temperature, said film consisting of a single layer of hot-welding material having a fusion temperature of the same order as that of the hot-welding material of the strip, said process consisting of the steps of heating a section of said strip; conveying said heated section toward said film for lamination therewith; cooling said heated section prior to lamination with said film; applying a fusion face of said heated section to said film; and reproducing the above steps on an adjacent section of said strip and film; said process being characterized in that the intensity of heating of the section of strip is controlled by raising said heating to a temperature between the temperature of fusion of its hot-welding material and that of its support material, the fusion face of said adjacent section of the strip being applied to an unrolled piece of film in a zone where said film is stretched and is not superimposed on other pieces of film, the cooling thereof consisting of a differential cooling varying in intensity over the width of the strip, said intensity being limited to a low value in the central zone of said strip and increasing progressively towards one edge thereof until it reaches a value producing a drop in temperature such that the highest temperature of the hot-welding material is equal to its lower fusion limit, in such a manner that the depth of film welded to the strip is a maximum and is substantially constant in the central zone of the strip and decreases progressively towards the edge thereof, until it reaches zero welding depth and the strip is merely joined to the film.

3,844,868

METHOD OF CURTAIN-COATING AN ADHESIVE MATERIAL ON A STRUCTURAL PART

Dale E. Wentroble, Tyler, Tex., and Milton H. Coleman, East Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 7, 1972, Ser. No. 269,679
Int. Cl. C09j *5/00;* **B44d** *1/09;* **B05c** *5/00*
U.S. Cl. 156—307 **1 Claim**



1. A method of bonding an elastomeric bellows onto a concave metallic surface comprising the steps of:

a. cleaning the concave metallic surface;
b. heating the cleaned surface to a desired temperature level;
c. conveying the heated surface through a vertical continuously falling curtain of a liquid adhesive material at a speed to deposit a desired uniform coating of adhesive material on the concave metallic surface, the heated surface causing a substantial portion of the liquid solvent of the adhesive material to rapidly vaporize to substantially increase the viscosity of the adhesive material;
d. depositing an additional quantity of adhesive material on the concave surface by directing the additional quantity in a generally diagonal path relative to the continuously falling curtain of liquid adhesive material, the additional quantity of adhesive material being directed at portions of the concave surface which are disposed in a generally vertically extending plane;
e. drying the concave surface to permanently affix the adhesive material coating thereon;
f. cleaning the bellows;
g. conveying the cleaned bellows through the vertical, continuously falling curtain of liquid adhesive material at a speed to deposit a desired thickness of adhesive material on a surface of the bellows;
h. at least partially drying the bellows to permanently affix the adhesive material thereon; and
i. uniting the surface of the bellows having the adhesive material coating thereon with the adhesive material coated concave surface to form a permanent bond therebetween.

3,844,869

APPARATUS FOR ULTRASONIC WELDING OF SHEET MATERIALS

Edgar C. Rust, Jr., Williamstown, Mass., assignor to Crompton & Knowles Corporation, New York, N.Y.

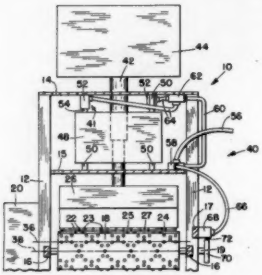
Filed Dec. 20, 1972, Ser. No. 316,861
Int. Cl. B32b *31/00*
U.S. Cl. 156—358 **9 Claims**

1. Apparatus for joining two or more sheets, at least one of which contains a thermoplastic material, comprising:

a. an ultrasonic electro-acoustic converter;
b. a resonator connected to said converter and having a working surface;
c. anvil means having surfaces for opposing and cooperating with said working surface so that energy will be transmit-

ted to said sheets by said resonator for producing welds in those portions of said sheets placed between said working surface and said opposing surfaces, wherein the total surface area of said opposing surfaces varies during operation of said apparatus;

d. means for advancing the sheet-like elements to be joined between said resonator and said anvil means in contact with said working surface and said opposing surfaces;



e. means for modifying the total amount of energy transmitted by the resonator to said sheets; and

f. control means operatively connectd to said modifying means so that energy will be transmitted by said resonator to said sheets at at least two different rates, a relatively high rate for a relatively high total surface area of said opposing surfaces and a relatively low rate for a relatively low total surface area of said opposing surfaces.

3,844,870

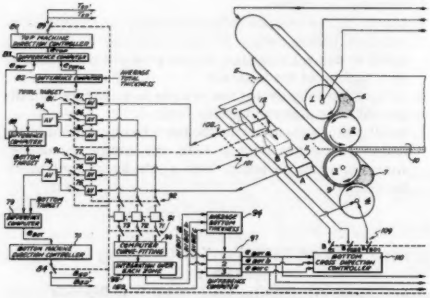
PROCESS CONTROL SYSTEM

John Francis Donoghue; Dan Edward Forney; Robert Lee Heiks, all of Columbus; Gerald A. Lasson, Dublin; Robert Eugene Mc Call, Columbus, and Charles Ray Rich, Powell, all of Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed June 12, 1972, Ser. No. 261,999

Int. Cl. B32b *31/06*

U.S. Cl. 156—360 **37 Claims**



1. Method for controlling a tire calender to maintain a desired thickness and profile in a strip of sheet material including first and second layers or rubber and an intermediate layer of tire cord, in which said tire calender includes first layer thickness varying means for varying the machine direction thickness of said first layer uniformly across said first layer, strip thickness varying means for varying the machine direction thickness of said strip uniformly across said strip, first layer profile varying means for varying the thickness of the central portion of said first layer with respect to the thickness at the edge portions of said first layer, and strip profile varying means for varying the thickness of the central portion of said strip with respect to the thickness at the edge portion of said strip, said method comprising

controlling the machine direction thickness of said first layer of rubber to a selected thickness target by means of said first layer thickness varying means,

controlling the total machine direction thickness of said strip to a selected thickness target by means of said strip thickness varying means,

controlling the profile of said first layer of rubber to an average indication of thickness for said first layer by means of said first layer profile varying means, and

controlling the profile of said strip to an average indication of thickness for said strip by means of said strip profile varying means.

3,844,871

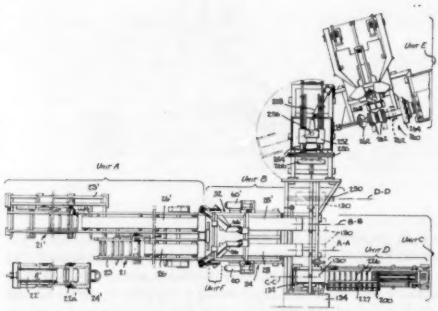
TIRE BUILDING MACHINE

William C. Habert, Fraser; Wayne Baumgartner, Sr., Royal Oak, and Robert J. Brown, Grosse Pointe Farms, all of Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,947

Int. Cl. B32b *31/00*; **B29h** *17/02*

U.S. Cl. 156—362 **46 Claims**



1. Apparatus for building a pneumatic tire, the apparatus comprising: a rotatably driven breaker building drum; at least one rotatably driven breaker applicator wheel spaced radially from and adjacent to said drum; breaker conveyor means for advancing a continuous breaker strip to and upon the periphery of said wheel; breaker strip severing means for severing from said breaker strip a leading breaker on said wheel to be transferred to said drum; electronic digital control means operatively coupled with said wheel and drum for rotatably indexing said wheel and drum to respective tangentially corresponding reference positions relative to one another at which transfer to said drum of a leading edge of said breaker on said wheel is to be initiated, said drum at its respective reference position including means thereon for effecting transfer of said leading breaker edge from said wheel to said drum, said control means including different drive means operatively associated with said wheel and drum respectively for rotating each simultaneously with one another after transfer of said leading breaker edge to said drum to complete the transfer of the entire breaker to said drum, one of said drive means being operatively associated with said drum for varying the rate of rotation thereof during breaker-transfer; and pulse-generating feed-back means operatively coupled with said wheel, said drum and said control means for relaying intelligence to said

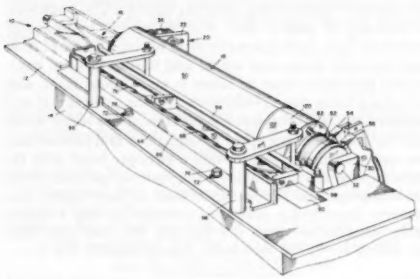
control means, via a continuous transmission of discrete pulses which are related to respective peripheral increments of said wheel and drum, firstly, prior to breaker-transfer, of the course and completion of indexing of said wheel and drum to their respective tangentially corresponding reference positions and secondly, during breaker-transfer, of the relative peripheral speeds of said wheel and drum so that said control means in response via pulse-rate comparison effects pulse-regulated variable rotation of said drum at a peripheral speed corresponding to the peripheral speed of said wheel.

3,844,872

HEAT SEALING APPARATUS

Francis X. Lenoir, New Castle; Bruce E. Metz; Ashley A. Brooks, both of Wilmington, all of Del., and William J. Hill, Landenburg, Pa., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jan. 8, 1973, Ser. No. 321,687
Int. Cl. B32b *31/00*; **B65b** *51/00*
U.S. Cl. 156—498 **12 Claims**



1. Apparatus for sealing overlapped portions of a heat-sealable film wrapper to form a heat-sealed seam comprising a platen having a substantially cylindrical surface, means for rotating said platen about its longitudinal axis, a guide spaced from said platen to form a flow path past said platen, said flow path being substantially parallel to the longitudinal axis of said platen and designed for packages having wrappers to be sealed such that the film wrapper will make contact at its overlapped portions with the cylindrical surface of said platen, means for moving individual packages along said flow path, and means for heating the cylindrical surface of said platen whereby said platen can transfer heat to said film wrapper to form a heat-sealed seam along said overlapped portion.

3,844,873

CHRISTMAS TREE CONSTRUCTION

Sylvester A. Dalske, and Jewelle M. Dalske, both of 110-Caselli Cir. No. 1, Sacramento, Calif. 95823

Filed Feb. 28, 1973, Ser. No. 336,707
Int. Cl. A47g *33/06*
U.S. Cl. 161—22 **10 Claims**

1. A decorative Christmas Tree comprising a generally horizontal base, a shaft extending upwardly from said base perpendicularly thereto, an elongate rod having a complete loop intermediate the opposite ends thereof engaged over said shaft spaced upwardly from said bases, an accordion folded net material threaded onto each end of said rod adjacent one edge of said net material, said net material being spirally wound around said rod to a generally cylindrical form, thread-

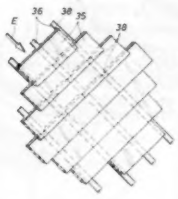
ing and piercing means and detachable means on the outer end of said rod for securing said net material on said rod.

3,844,874

OVERLAPPING RIBBON MESH AND METHOD THEREFOR

George S. Nalle, Jr., 108 West 2nd St., Austin, Tex. 78701

Continuation of Ser. No. 101,816, Dec. 28, 1970, abandoned, which is a division of Ser. No. 761,142, Sept. 20, 1968, Pat. No. 3,560,306. This application Nov. 29, 1972, Ser. No. 310,539
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **8 Claims**



1. A plastic mesh, comprising a first group of parallel filaments forming an intersection with a second group of parallel ribbonlike filaments such that only a portion of the width of the filaments of said second group is bonded to filaments of said first group at said intersection, the spacing and width of said second group being such that the unbonded edges of the filaments of said second group overlap the bonded edges of adjacent filaments of said second group, said overlapping filaments being non-bonded to one another to allow fluids to circulate through said mesh.

3,844,875

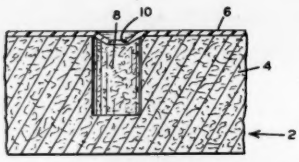
PERFORATED VINYL FILM CEILING BOARD

Walter W. Chamberlain, III, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed July 18, 1972, Ser. No. 272,859
Int. Cl. B32b *3/10*
U.S. Cl. 161—112 **1 Claim**

1. An acoustical ceiling product comprising a base layer of fiber composition ceiling board, laminated thereto is a plasticized vinyl film, both structures being subjected to a perforation action and then aging period so that the perforation in the ceiling board is substantially larger than the perforation in the vinyl film, said vinyl film being concave in the region around

the perforation in the vinyl film, and said ceiling product having an acoustical rating which is equal to the size of the



diameter of the perforation within the ceiling board and greater than the rating which would be secured by a board perforation equal in size to the hole within the vinyl film.

3,844,876

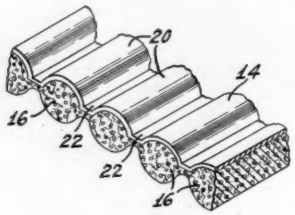
FOAMED POLYESTER RESIN LAMINATED PRODUCTS

Christopher L. Wilson, High Point, N.C., and Oscar Shuffman, Scarsdale, N.Y., assignors to Oscar Shuffman, Scarsdale, N.Y. and Fred Shuffman, Tenafly, N.J.

Division of Ser. No. 441,986, July 8, 1954, Pat. No. 3,170,832. This application Feb. 23, 1965, Ser. No. 440,054The portion of the term of this patent subsequent to Feb. 23, 1982, has been disclaimed.

Int. Cl. B32b *27/40, 3/26*

U.S. Cl. 161—119 **8 Claims**



1. A material comprising a layer of a resilient, foamed, diisocyanate-modified, polyester resin, portions of said layer being coalesced and thereby permanently reduced in thickness.

3,844,877

CARBONACEOUS FABRIC LAMINATE

Theodore Ralph Wessendorf, Florence, Ky., and John Michael Criscione, Broadview Heights, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 846,252, July 30, 1969, abandoned. This application Dec. 6, 1971, Ser. No. 205,407

Int. Cl. B32b *11/10*

U.S. Cl. 161—156 **8 Claims**

1. A laminate structure having a thermal conductivity no greater than 0.077 BTU-ft./ft.^{2}-hr.-°F. and a thermal diffusivity no greater than 0.0024 cm.^{2}/second at room temperature, as measured by the laser pulse technique, comprising a plurality of superposed layers of non-woven paper-thin felt made from carbon fibers, wherein each layer of paper-thin felt is from 0.001 to 0.003 inches thick, bonded together with a carbonized binder.

3,844,878

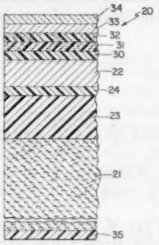
COMPOSITE FLEXIBLE SHEET MATERIAL

Herbert K. Price, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Feb. 28, 1972, Ser. No. 229,751

Int. Cl. B32b *27/40*

U.S. Cl. 161—190 **14 Claims**



1. A composite flexible sheet material suitable for roofing, siding and the like, comprising a metal foil layer, a primer adhering to said foil layer, a polymeric layer made of a straight chain aliphatic hydrocarbon polymer having a CH_2 backbone and adhering to said primer, and an asphalt impregnated fibrous base layer, said polymeric layer having a lower portion thereof partially permeated within said fibrous layer to interlock said polymeric layer to fibers in said fibrous layer, said interlocking being due at least in part to the presence of said lower portion of said polymeric layer at locations which would ordinarily have been occupied by asphalt in said fibrous base layer, said polymeric layer having a stronger bond with the asphalt impregnated fibrous layer than interior portions of the asphalt impregnated fibrous layer have to each other, said polymeric layer being moisture resistant, having a higher melting temperature than the asphalt, and said polymeric layer having an ASTM melt index between about 2 to 20.

3,844,879

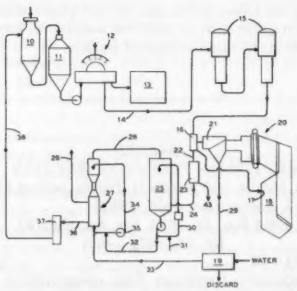
SYSTEM FOR REMOVING SODIUM CHLORIDE CONTAMINANTS FROM A MAGNESIUM BASE PULPING PROCESS

Louis R. Flais, and Robert A. McIlroy, both of Alliance, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,375

Int. Cl. D21c *11/02*

U.S. Cl. 162—36 **2 Claims**



1. In a chemical recovery system wherein cellulosic materials containing sodium chloride are pulped in a magnesium base cooking liquor, and the residual liquor from the pulping

process contains the sodium chloride from the cellulosic materials, the residual liquor is concentrated by evaporation and burned to produce hot flue gases containing sulphur dioxide and hydrogen chloride and entrained solids including sodium sulphate and magnesium oxide, the step of removing entrained solids from the gases, treating the solids to form a slurry of magnesium oxide and to discard the sodium sulphate, passing the flue gases through a sulphur dioxide absorbing zone in contact with the magnesium oxide containing slurry to form magnesium sulphur compounds, the improved step of washing the flue gases before they are passed to the sulphur dioxide absorbing zone to selectively remove the hydrogen chloride gases by absorption in a magnesium containing liquid, the magnesium containing liquid being formed by some of the entrained magnesium oxide solids passing with the flue gases to the hydrogen chloride washing step and combining with the washing liquid to form magnesium chloride and some of the gaseous sulphur oxides combines to form a solution of magnesium bisulphite in the liquid, recirculating a major portion of the liquid to the washing step to absorb hydrogen chloride, discarding a portion of the liquid, adding make up water to control the concentration of magnesium chloride and magnesium bisulphite in the recirculated liquid, removing some of the liquid from the washing step to be reacted with magnesium hydroxide to precipitate magnesium sulphite, the reacted liquid is separated from the precipitate with the liquid recycled to the washing step, and the precipitate solid magnesium sulphite subsequently utilized in the sulphur dioxide absorbing step in forming cooking liquor.

3,844,880
SEQUENTIAL ADDITION OF A CATIONIC DEBONDER, RESIN AND DEPOSITION AID TO A CELLULOSIC FIBROUS SLURRY

Frederick W. Meisel, Jr., Media, Pa., and Kenneth C. Larson, Wilmington, Del., assignors to Scott Paper Company, Delaware County, Pa.

Continuation of Ser. No. 108,638, Jan. 21, 1971, abandoned. This application July 20, 1973, Ser. No. 381,081
Int. Cl. D21d *3/00*; D21h *3/40*
U.S. Cl. 162—169 **18 Claims**

1. In a method of producing a water-laid cellulosic sheet material, the improvement which comprises adding to a slurry comprising cellulosic fibers; a cationic surface active agent as a debonder; at least one anionic or nonionic resin selected from the group consisting of acrylic emulsions and anionic styrene butadiene latexes; and a deposition aid for the resin in which the deposition aid, the resin and the debonder are sequentially added to the furnish and then forming a cellulosic sheet from said slurry.

3,844,881
MULTI-LAYERED FIBROUS WEB FORMING SYSTEM EMPLOYING A SUCTION ROLL POSITIONED ADJACENT THE WEB SIDE OF THE FORMING WIRE AND AROUND WHICH THE FORMING WIRE IS WRAPPED

Winship B. Moody, Worcester, Mass., assignor to Rice Barton Corporation, Worcester, Mass.

Filed June 9, 1972, Ser. No. 261,536
Int. Cl. D21f *1/00*, *11/04*
U.S. Cl. 162—297 **3 Claims**

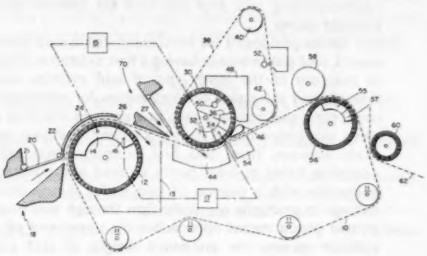
1. In apparatus for forming fibrous webs, comprising an endless travelling forming screen, a device for depositing slurry on the screen, and a first suction roll wrapped in part by said screen and located on the side of said screen opposite said slurry depositing device, that improvement comprising

a second suction roll located downstream of said first suction roll with respect to the direction of screen travel and adjacent the web-carrying side of said screen,

means forming a chamber disposed within said second roll adjacent and in effective communication with said web-carrying side of said screen, and

means connected to said chamber for creating subatmospheric pressure therein,

said screen being trained to wrap along a reversely concave arcuate path about said second roll to permit liquid removal radially into said second roll through the web surface opposite that contacting said screen, and

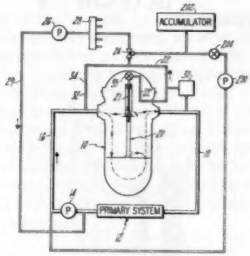


means for depositing a second slurry on the partially formed web carried on said screen between said rolls.

3,844,882
LIFT PISTON ASSEMBLY

Frank Bevilacqua, Windsor, and Malcolm D. Groves, Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,335
Int. Cl. G21c *7/08*
U.S. Cl. 176—36 R **16 Claims**



1. An improved hydraulic control rod actuator for a nuclear reactor, the reactor including a pressure vessel having a fuel assembly disposed therein and means delivering coolant under pressure to the interior of the vessel for circulation through the fuel assembly, the fuel assembly including a plurality of elements containing fissionable fuel and a plurality of neutron absorber elements disposed for movement in guide tubes located in the fuel assembly, the interiors of the guide tubes being exposed to the coolant, the reactor further including means establishing a control pressure less than the normal coolant pressure maintained within the pressure vessel, said control rod actuator comprising:

cylinder means located within the pressure vessel, said cylinder means being defined by a tubular member of substantially constant internal cross-sectional area, said cylinder means tubular member being oriented substantially vertically and axially aligned with an absorber element guide tube;

means defining a valve seat at the lower end of said cylinder means tubular member, said valve seat defining means being apertured whereby communication to the interior of said cylinder means is provided therethrough;

first coupling means for connecting said valve seat defining means to the absorber element guide tube axially aligned therewith;

buffer means positioned at the upper end of said cylinder means, said buffer means having a passage therethrough communicating at a first end with the interior of said cylinder means;

piston means positioned for movement within said cylinder means, said piston means having a first extension adapted to pass out of the lower end of said cylinder means through said valve seat defining means for mechanically connecting said piston means to a neutron absorber element, said piston means having a second extension oppositely disposed from said first extension, said second extension being at least partly tapered and adapted to cooperate with a portion of said buffer means defined passage to gradually terminate flow through said passage as said piston means approaches the upper end of said cylinder means, the combined weight of said piston means and absorber element being sufficient to overcome upwardly directed forces resulting from exposure to the pressurized coolant whereby said piston means will be normally seated on said valve seat defining means; and

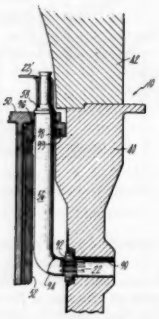
second coupling means for connecting the second end of said buffer means defined passage to the control pressure establishing means whereby a pressure less than the pressure vessel internal coolant pressure may be selectively applied to the interior of said cylinder means to cause upward movement of said piston means.

3,844,883

PRESSURE VESSEL PENETRATION TECHNIQUES

Frank Bevilacqua, Windsor; Malcolm D. Groves, and Gennaro V. Notari, both of Simsbury, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,369
Int. Cl. G21c 7/16
U.S. Cl. 176—36 R **14 Claims**



1. In a nuclear reactor, the reactor having a fuel assembly including fissionable fuel elements and neutron absorber elements movable with respect to the fuel elements, the fuel assembly and fluid responsive actuators for positioning the absorber elements being positioned within a pressure vessel, the actuators including piston means coupled to the absorber elements, the pressure vessel having a main portion and a removable head, the improvement comprising:

a first plurality of conduits commensurate in number with all of the absorber element actuators present in the reactor, said first plurality of conduits being located externally of the pressure vessel and having fluidic actuator position control signals applied to first ends thereof, the second ends of said conduits of said first plurality being formed into a bundle of tubular members closely positioned to one another;

a second plurality of conduits commensurate in number with said first plurality of conduits, said second plurality of conduits being located internally of the pressure vessel and having first ends coupled to respective absorber element actuators, the second ends of said conduits of said second plurality being formed into a bundle of tubular members closely positioned to one another; and

means for coupling the second ends of each of said first plurality of conduits to the second ends of respective of said second plurality of conduits, said coupling means passing through the wall of the pressure vessel main portion and defining a liquid-gas separation between the interior and exterior of the pressure vessel whereby absorber element position control signals generated externally of the pressure vessel may be applied to the fluid responsive actuators at one side only of the actuator pistons, said coupling means being associated with an aperture in the pressure vessel main portion wall and comprising:

plug means sealed to the pressure vessel main portion wall about the periphery of the aperture therein, said plug means having a plurality of passages therethrough, the second ends of said conduits of said first plurality being terminated in respective of said plug means passages adjacent the exterior side thereof;

connector means positioned internally of the pressure vessel, said connector means having a plurality of passages therethrough, said second ends of the second plurality of conduits being connected to respective of said connector means passages; and

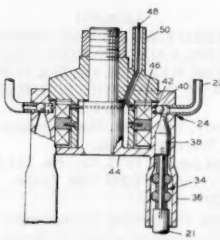
a third plurality of conduits extending between the pressure vessel side of said plug means and said connector means, said third plurality of conduits being terminated at first ends in respective of said plug means passages whereby said plug means provides continuous communication between the individual conduits of said first and third pluralities, the second ends of said conduits of said third plurality being coupled to the second ends of respective of said second plurality of conduits by respective passages in said connector means.

3,844,884

ISOLATION VALVE AND CONTROL SYSTEM EMPLOYING THE SAME

Bevilacqua Frank, Windsor; William S. Flinn, Bloomfield, and Malcolm D. Groves, Simsbury, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed July 31, 1972, Ser. No. 276,775
Int. Cl. G21c 7/16
U.S. Cl. 176—36 R **7 Claims**



1. In a fission rate control system for a nuclear reactor, the reactor including a vessel through which a pressurized coolant is circulated, the control system including neutron absorber element means movable within tubular guide members relative to a fuel assembly in response to the establishment of a pressure differential across the absorber element means, the improvement comprising:

a source of lift pressure which differs from the coolant pressure maintained within the reactor vessel;

means including normally closed magnetically actuated isolation valves associated with each guide member for selectively controlling the application of lift pressure from said source to first ends of the tubular guide members, said isolation valves being positioned within the reactor vessel adjacent the said first ends of the guide members;

magnetic field responsive means carried by each of the absorber element means;

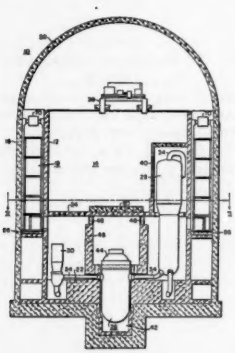
means juxtapositioned to the said first ends of the tubular guide members for selectively generating magnetic fields, said magnetic fields encompassing said isolation valves and the said first ends of the guide members, said field generating means causing opening of said isolation valves when energized whereby a lift flow will be established and the absorber element means associated with the open valves will be moved from the vicinity of the second ends of the guide members to the first ends thereof, the field provided by said field generating means attracting said field responsive means to magnetically latch at the said first ends of the tubular guide members absorber elements associated with open valves; and

means for applying the reactor vessel coolant to the guide members whereby a pressure differential will be established across the absorber element means with said isolation valves in the open condition.

3,844,885
INSULATION AND COOLING SYSTEM FOR A NUCLEAR REACTOR CONDENSER COMPARTMENT

Sterling J. Weems, Chevy Chase, Md.; H. William McCurdy, Vienna, and John W. Johnson, Arlington, both of Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1969, Ser. No. 820,073
Int. Cl. G21c *13/00*
U.S. Cl. 176—37 **11 Claims**

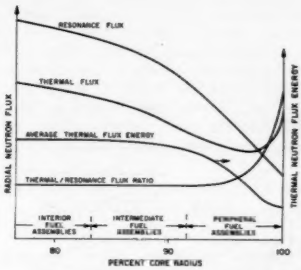


1. A containment for pressurized fluid-handling apparatus including a nuclear reactor having a coolant system from which a pressurized expansible fluid may escape, an inner vertical generally cylindrical wall defining a compartment for said reactor, an outer vertical generally cylindrical wall spaced from the inner wall to define a generally annular condenser compartment between said walls, means for supporting a quantity of fusible material in a solid state in the condenser compartment, said material having the property of melting at a temperature lower than the condensation temperature of the condensable portions of said escaping fluid, cooling means including refrigeration apparatus and separate fluid-conducting vertically extending insulated duct panels placed in side by side relationship lining the inside of the walls of the condenser compartment, each of said duct panels comprising an integral unit divided into downflow and upflow channels with cross-flow means interconnecting the bottom of said chennels, and means for circulating a refrigerated cooling fluid from said apparatus through the channels in said panels and out of contact with said material to maintain said material in a solid state except when exposed to said escaping fluid.

3,844,886
NUCLEAR REACTOR UTILIZING PLUTONIUM IN PERIPHERAL FUEL ASSEMBLIES

Russell L. Crowther, Saratoga, Calif., assignor to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 726,079, May 2, 1968, abandoned. This application Apr. 16, 1971, Ser. No. 134,845
Int. Cl. G21c *1/00*
U.S. Cl. 176—44 **12 Claims**



1. A method of fueling and refueling a thermal nuclear reactor having a fuel core comprising an array of fuel assemblies radially surrounded by a moderator-reflector water layer wherein said core includes a first region including the ones of said fuel assemblies having at least one edge adjacent said water layer and a second region including all of the fuel assemblies of said core except the fuel assemblies in said first region, comprising the steps of: placing a first fuel enriched with fissile uranium and initially free of plutonium in the fuel assemblies in said second region of said core, and placing a second fuel including initial fissile plutonium in the fuel assemblies in said first region of said core.

3,844,887
NUCLEAR REACTOR FUEL ASSEMBLY

Nicholas J. Georges, Pittsburgh, and William E. Pennell, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 12, 1968, Ser. No. 759,410
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **6 Claims**

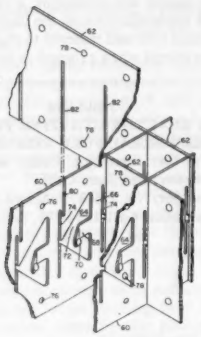
1. A fuel assembly for a nuclear reactor of the type wherein a coolant medium is caused to flow through longitudinal channels formed in the fuel assembly, which comprises:

a plurality of elongated fuel elements disposed in a generally parallel array;

at least one grid structure comprising a plurality of grid straps extending laterally across said fuel elements and forming a plurality of openings, some of said openings having fuel elements disposed therein;

means for laterally supporting said fuel elements associated with said some of said openings including a relatively resilient loading member extending laterally into each said grid openings and slippingly contacting the fuel element, said loading member being connected to an intermediate portion of torsion member at its end opposite

that which contacts said fuel elements, said torsion member being supported only at its opposite longitudinal ends



by a grid strap for absorbing forces acting on the loading member by twisting whereby said forces are absorbed uniformly.

3,844,888

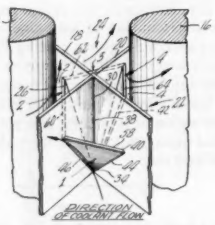
HELICAL FLOW DEFLECTOR CONE FOR FUEL ELEMENT ASSEMBLIES

John N. Calvin, West Simsbury, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Jan. 4, 1971, Ser. No. 103,454

Int. Cl. G21c *3/30*

U.S. Cl. 176—78 **4 Claims**



1. A nuclear fuel assembly comprising a plurality of longitudinally extending fuel elements forming longitudinally extending cooling flow channels therebetween and adapted to have a fluid coolant flow in one direction therethrough longitudinally of said fuel elements, flow deflectors in said channels, each deflector comprising a conical structure pointed upstream, having a series of circumferentially and sequentially arranged deflector surfaces and with each surface slanted with respect to said longitudinal flow toward said fuel elements so as to direct flow against the sides of said fuel elements and twisted with respect to said flow so as to impart a rotary motion to said flow, a grid of intersecting cross members extending transversely of said fuel elements, defining openings receiving said fuel elements and intersecting in said channels with the conical structures supported by said grid at the intersections of said cross members with a deflector surface in each opening around an intersection and in which the deflectors are arranged in said openings around said fuel elements so as to impart a rotary motion to the fluid around the elements.

3,844,889

PROCESS OF PREPARING 2-HYDROXY-2-CARBOXYLTHYL-N(7-OR 8-CHLORO-4-UINOLINYL)ANTHRANILATE

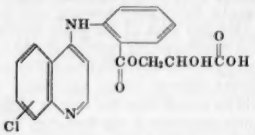
Robert John Theriault, Kenosha, Wis.; Earl Elmer Fager, Lake Villa, and Norman Earl Wideburg, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 246,091, April 13, 1972, Pat. No. 3,764,603. This application May 10, 1973, Ser. No. 359,040

Int. Cl. C12b *1/00*

U.S. Cl. 195—51 R **1 Claim**

1. A method of producing a compound of the formula



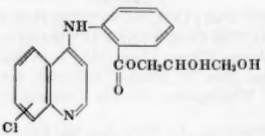
wherein the chloro atom is in the 7- or 8-position, said method comprising culturing a suitable microorganism selected from the group consisting of

Streptomyces species Act–9, NRRL 3947,

Coprinus sclerotigenus 933, NRRL 3306, and

Marasmius rotula SS–9, NRRL 3944,

in a nutrient medium containing suitable sources of carbon, nitrogen and minerals in the presence of a second compound of the formula



wherein the chloro atom is in the 7- or 8-position, for a sufficient time to transform said second compound to said desired compound.

3,844,890

ALKALINE CELLULASE AND PREPARATION OF THE SAME

Koki Horikoshi, Iruma; Yonosuke Ikeda, and Masami Nakao, both of Tokyo, all of Japan, assignors to Rikagaku Kenkyusho, Wako-shi, Saitama-ken, Japan

Filed Sept. 27, 1972, Ser. No. 292,496

Claims priority, application Japan, Sept. 30, 1971, 46-76685

Int. Cl. C07g *7/02*

U.S. Cl. 195—62 **6 Claims**

1. An alkaline cellulase which is a member of the group of the alkaline cellulase from Bacillus N_1(ATCC 21832) and the alkaline cellulase from Bacillus N_4 (ATCC 21833) said alkaline cellulase having optimum stability in the pH range of 8 – 10 at a temperature of 40° C.

3,844,891

FLOWABLE PANCREATIN PREPARATION OF LOW GERM CONTENT, AND A PROCESS FOR ITS MANUFACTURE

Hans Hess, Binningen; Guenther Mueller, Arlesheim, both of Switzerland, and Horst Stolte, Wehr, Baden, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 19, 1971, Ser. No. 164,052

Claims priority, application Switzerland, July 23, 1970, 11170/70

Int. Cl. C07g *7/02*

U.S. Cl. 195—68 **10 Claims**

1. Process for preparing a free flowing pancreatin preparation of low germ content less than 10,000/g, which displays a

practically unchanged enzyme activity in comparison to unpurified pancreatin, comprising, working a pancreatin preparation contaminated with pathogenic germs into a plastic mass with an aqueous solution or a stabilized emulsion of a lower aliphatic ketone having 3 to 6 carbon atoms or a halogenated hydrocarbon having a boiling point of between 30°–60° C, drying the plastic mass in a stream of air, and comminuting the dried mass at a temperature below 40° C.

3,844,892

METHOD OF IMMOBILIZING ENZYMES

Joseph S. Matthews, O'Hara Twsp., Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 19, 1972, Ser. No. 316,453
Int. Cl. C07g 7/02
U.S. Cl. 195—68 **6 Claims**

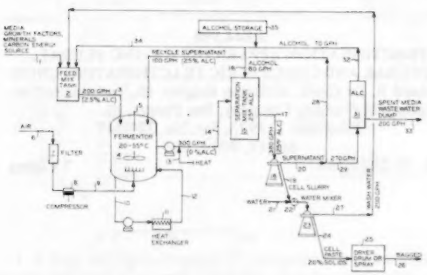
1. A method for the preparation of an immobilized enzyme which comprises reacting an aqueous solution of an enzyme with an epoxy containing copolymer prepared by the free radical copolymerization of an epoxy monomer having at least one 1, 2-epoxy group and one terminal unsaturation with an olefin monomer having the formula $CH_2{=}C(R_1){-}R_4$ in which R_1 is hydrogen or methyl and R_4 is cyano or lower carboalkoxy whereby said enzyme is chemically bonded through epoxy groups to said copolymer.

3,844,893

MICROBIAL SYNTHESIS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1973, Ser. No. 332,031
Int. Cl. C12b 1/00
U.S. Cl. 195—115 **15 Claims**



1. In a fermentation process wherein an oxygenated hydrocarbon as carbon energy source material, nutrients, mineral salts, water, and at least one microorganism capable of employing said oxygenated hydrocarbon carbon energy source material, are maintained under fermentation growth conditions in the fermentation step, and the resulting fermentation process effluent therefrom subsequently is separated into streams comprising cellular material and spent media, the improvement comprising the steps of treating said fermentation process effluent with a separating agent selected from the group consisting of lower alcohols, and ketones in the proportion of at least about 10 volume percent relative to said fermentation process effluent,

separating the resulting admixture of fermentation process effluent and separating agent from said treating into a cellular slurry stream and a stream containing spent media and separating agent,

recycling at least a portion of said stream of spent media and separating agent to said fermentation step to provide therein at least a part of said carbon energy source material and said mineral salts,

separating a further portion of said stream of spent media and separating agent to recover therefrom a portion of said separating agent, and

recycling said recovered separating agent to at least one of said fermentation step and said treating step.

3,844,894

APPARATUS FOR PERFORMING ASSAYS ON REACTIONS THAT PRODUCE RADIOACTIVE GASES

Melvyn H. Kronick, Stamford, Calif., and Samuel H. Wilson, Bethesda, Md., assignors to The United States of America as represented by the Secretary of Department of Health, Education and Welfare, Washington, D.C.

Filed Aug. 30, 1971, Ser. No. 175,903
Int. Cl. G01n 31/14
U.S. Cl. 195—127 **1 Claim**

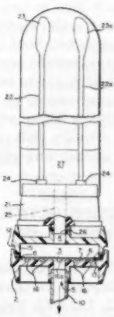
1. A device for detecting the evolution of radioactive gases, comprising a container, a sealable cap thereon, a gas vent in said cap, and a tent-like cover of scintillator plastic surrounding said gas vent and attached to said cap, wherein said container includes a main chamber and an auxiliary chamber communicating at the upper portion thereof with the upper portion of said main chamber, whereby a tilting of said container will cause the contents of said auxiliary chamber to flow into said main chamber.

3,844,895

FILTRATION AND INCUBATION APPARATUS

Robert E. Rose, Chelmsford, and Adrian Reti, Cambridge, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Division of Ser. No. 214,743, Jan. 3, 1972, abandoned. This application Oct. 17, 1973, Ser. No. 407,050
Int. Cl. C12k 1/10
U.S. Cl. 195—139 **1 Claim**



1. Apparatus for collecting, isolating and growing microorganisms which comprises a container adapted to retain liquid

nutrient for microorganisms, said container having a cover to retain at least one swab within said container and having a liquid outlet, apparatus for filtering liquids which comprise a first housing section having an inlet, a flat filter and a support pad for said filter supported by a second housing section, said first and second housing sections being shaped to form a chamber adjacent an inlet surface of said filter, to form a seal between said housing sections, and to hold said filter and pad stationary adjacent said chamber, said filter having a porous edge formed of a hydrophobic material which edge extends into said chamber, the liquid outlet of said cover being fit into the inlet of said first housing section to form a seal therewith from the atmosphere.

3,844,896

APPARATUS FOR PERFORMING BACTERIOLOGICAL TESTS AUTOMATICALLY

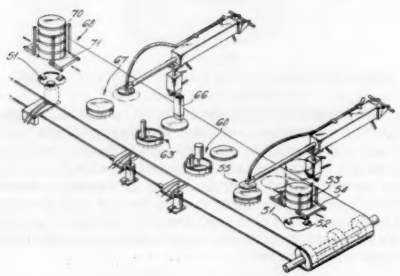
Anthony Nelson Sharpe, Rushden, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 190,871, Oct. 20, 1971, abandoned. This application June 20, 1973, Ser. No. 371,649

Claims priority, application Great Britain, Oct. 29, 1970, 51377/70

Int. Cl. C12b *1/00*

U.S. Cl. 195—139 **7 Claims**



1. A bacteriological sampling apparatus comprising a media dish store,

a sample and diluent supply station,

a gelling agent supply station,

a discharge station, and

a media dish transport system for transporting each media dish from said store and to each of the stations in turn, the sample and diluent supply station comprising a rotary dish carrier for rotating a dish when at said station to mix liquid in said dish, a diluent supply means, and a bacteriological sample pipetting means which is arranged to supply a sample to each dish in turn and after mixing to withdraw from the dish under sterile conditions a portion of mixed diluted sample and hold said portion for supply to a following dish, said sample pipetting means comprising a device which is arranged to extrude a tubular nozzle before use, means to sever said nozzle after use, and the gelling agent supply station comprising gelling agent supply means, and a rotary dish carrier for rotating the dish to mix diluted sample with gelling agent.

3,844,897

MIXING DEVICE

Hans Mueller, Alte Landstrasse 415, CH-8708 Mannedorf, Zurich, Switzerland

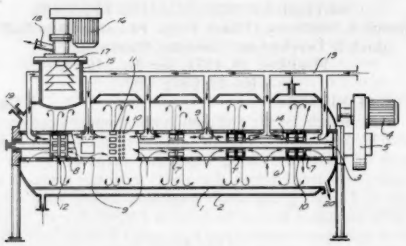
Filed Dec. 11, 1972, Ser. No. 314,280

Claims priority, application Switzerland, Dec. 10, 1971, 18136/71; Jan. 28, 1972, 1333/72; Feb. 28, 1972, 2689/72

Int. Cl. C12b *1/14*

U.S. Cl. 195—142 **12 Claims**

1. A device for mixing liquid and gas, especially for mixing gaseous fluid into liquid nutrients in fermentation processes, comprising an elongated housing having a substantially horizontal longitudinal axis, and adapted to accommodate a body of liquid; a rotatable shaft extending in said housing along said axis; a plurality of mixing elements mounted on said shaft for rotation therewith and each configured as a disc-shaped element which axially draws in and peripherally expells the ambient liquid; said elements being spaced axially of said shaft and having respective peripheries; a tubular guide baffle surrounding said shaft and elements in said housing and having larger suction openings located intermediate the respective elements for said mixing elements to draw fluid therethrough, and smaller dispersing openings in the region of the respective periphery for discharge of a gas and liquid mixture to the exterior of said baffle; a conduit extending along said horizontal axis and comprising a plurality of branches extending through axially spaced openings in said baffle; and a plurality of gas inlets, each associated with one of said branches and one of said mixing elements, and located in the region where said mixing elements axially draw the ambient liquid.



3,844,898

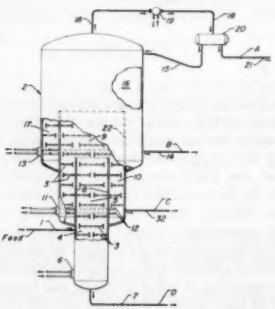
FRACTIONATION APPARATUS HAVING PLURAL, INTEGRAL AND CONCENTRIC FRACTIONATING UNITS

Richard R. De Graff, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 2, 1973, Ser. No. 320,247

Int. Cl. B01d *3/26*

U.S. Cl. 202—154 **7 Claims**



1. A fractionation apparatus capable of producing four pure component streams which comprises:

a. a lower first, a second intermediate and an upper, third fractionation unit, each of said units being cylindrical in cross-sectional configuration, each of said fractionation units having an upper rectification section and a lower stripping section, the said lower first unit being of less

diameter than the second intermediate unit and extending concentrically into said second intermediate unit a substantial distance, said second intermediate unit extending concentrically into said upper, third fractionation unit a substantial distance, whereby a first annular chamber is provided between said first and second units and a second annular chamber is provided between said second and third units, each of said annular chambers having a series of fractionation trays therein;

b. means to introduce a feed stream to the apparatus at a point located between the top and bottom of said lower first fractionation unit;

c. reboiler means located near the bottom of the stripping section of each of said fractionation units;

d. means to provide external reflux to the rectification section of the upper third fractionation unit;

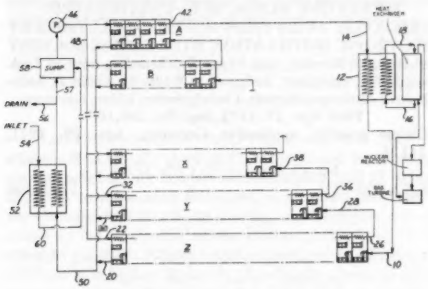
e. means to remove a product stream from the bottom of each of said stripping sections; and

f. means to remove a product stream from the top of the rectification section of the third fractionation unit.

3,844,899
MULTISTAGE FLASH DISTILLATION

Paul H. Sager, Jr., Solana Beach, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sept. 25, 1972, Ser. No. 291,980
Int. Cl. B01d *3/00, 1/28, 3/10, 3/02*
U.S. Cl. 202—173 **8 Claims**

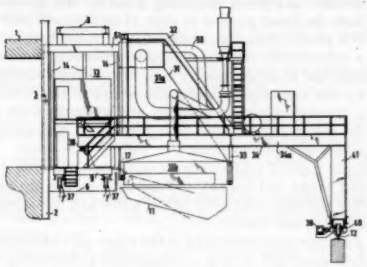


1. A flash distillation method for the treatment of sea water or the like, which process comprises providing a plurality of parallel flow trains of multistage flash distillation units of successively greater numbers of units with respect to increasing temperature gradient, the stages of each train having interconnected condenser sections and interconnected flash evaporation sections respectively, maintaining said evaporation sections of each train at progressively lower pressures, preheating a first dilute incoming brine stream in the interconnected condenser sections of the shortest train and then heating said brine stream to a desired temperature and injecting said preheated and heated first stream into the highest pressure flash evaporation section of the longest train of the multistage unit, said desired temperature of said preheated and heated stream causing flashing to occur upon injection, heating a second equally dilute brine stream by heat-exchange with condensing vapor by passing said second stream through the interconnected condenser sections of the longest train in the direction of increasing pressure gradient, withdrawing said heated second stream from the condenser section of said highest pressure stage, and injecting said heated second stream into the highest pressure flash evaporation section of the next longest train, said heated second stream being at a temperature where flashing occurs upon injection.

3,844,900
COKING INSTALLATION

Fritz Schulte, Meerbusch-Buederich, Germany, assignor to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Germany

Filed Oct. 12, 1973, Ser. No. 405,857
Claims priority, application Germany, Oct. 16, 1972, 2250636
Int. Cl. C10b *39/08*
U.S. Cl. 202—227 **17 Claims**

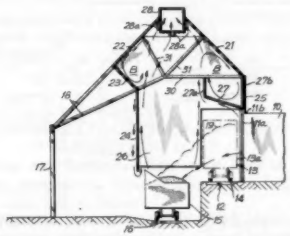


1. In a coking installation having a horizontal-chamber coke oven battery, an apparatus comprising first rail means extending along said battery; a coke guide car mounted on said first rail means for movement along said battery and adapted to receive incandescent coke from the respective ovens; a quenching car mounted for movement along said battery and adapted to receive coke to be quenched from said coke guide car; second rail means extending along said first rail means at a side of said quenching car which faces away from said battery; a supporting frame rollably mounted on said first and second rail means and having at least one arm portion which at least in part passes freely around one end of said coke guide car, said supporting frame being releasably coupled to said coke guide car for movement with the same along said battery; and a hood carried by said supporting frame and extending at least in part over said quenching car for intercepting dust and gases which become liberated from said coke.

3,844,901
COKE OVEN EMISSION CONTROL SYSTEM

Edward H. Roe, Kirkwood, Mo., and James D. Patton, Collinsville, Ill., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Mar. 19, 1973, Ser. No. 342,396
Int. Cl. C10b *41/08*
U.S. Cl. 202—263 **5 Claims**



1. In an apparatus for collecting particulate emissions discharged into the atmosphere in the presence of high temperature gases produced by a high temperature chemical reaction which includes a non-compartmented stationary housing de-

fining an emissions entrapment zone positioned to receive such emissions and having a peaked roof including end panels and outwardly and downwardly extending first and second roof panels which are higher than the source of said emissions, the first of said roof panels extending from the peaked roof to a point over or beyond the source of said emissions, and the second roof panel extending from the peaked roof in a direction away from the source of said emissions, the lower edge of the roof panels also being higher than the source of said emissions, and a suction duct positioned at or near the apex of the roof, the improvement which comprises providing:

a. at least one panel extending inwardly and downwardly from the lower portion or edge of said second roof panel to a plane above the source of said emissions;

b. a substantially vertical wall panel extending downwardly from the lower portion or edge of said first roof panel to a point immediately above the source of said emissions;

c. a panel extending inwardly and upwardly from about the lower edge of said first roof panel and above the source of said emissions;

the upper part of said housing comprising said roof panels, said end panels and the (a), (b) and (c) panels constituting a zone for thermal expansion of the gases and for particulate classification and fallout;

d. a suction duct positioned in the upper part of said expansion zone and having a progressively increasing cross-sectional area as the duct approaches the suction end thereof; and

e. air scoops, projecting from openings along the length of said duct, having leading edges opposed to the direction of gas flow in the duct and being positioned in a manner to substantially balance the gas pressure throughout said duct when suction is applied thereto in order to produce a negative pressure in the duct to evacuate particulates and gases from said thermal expansion zone.

3,844,902

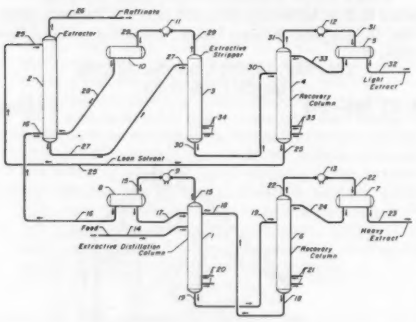
COMBINATION OF EXTRACTIVE DISTILLATION AND LIQUID EXTRACTION PROCESS FOR SEPARATION OF A HYDROCARBON FEED MIXTURE

Anthony G. Vickers, and Robert A. Lengemann, both of 20 UOP Plaza Algonquin & Mt. Prospect Roads, Des Plaines, Ill. 60016

Filed Apr. 2, 1973, Ser. No. 347,587

Int. Cl. C07c *7/08, 7/10;* **B01d** *3/40*

U.S. Cl. 203—46 **16 Claims**



1. A process for the recovery of two aromatic fractions and non-aromatics from a hydrocarbon feed mixture containing aromatic and non-aromatic hydrocarbons, which process comprises:

a. passing said feed into an extractive distillation zone maintained under extractive distillation conditions including the presence of liquid solvent capable of selectively dissolving a first aromatic fraction of said two fractions to provide a first rich solvent stream containing said first aromatic fraction and a first overhead vapor stream comprising non-aromatic and second aromatic fraction material;

b. recovering said first aromatic fraction from said first rich solvent and passing solvent remaining after said recovery back to said extractive distillation zone of step (a);

c. condensing at least a portion of said first overhead vapor stream to form a condensed feed;

d. passing condensed feed into a liquid phase extraction zone maintained at extraction conditions including the presence of a liquid solvent capable of selectively dissolving the second aromatic fraction material in said condensed feed and a hereinafter defined reflux to provide a second rich solvent stream containing the second aromatic fraction and non-aromatics and a raffinate phase comprising non-aromatic hydrocarbons;

e. passing said second rich solvent stream into a stripping zone maintained under stripping conditions to remove non-aromatics from said second rich solvent to provide a second overhead vapor comprising non-aromatics and a third rich solvent stream comprising said second aromatic fraction and solvent;

f. condensing second overhead vapor and returning at least a portion thereof to said liquid-liquid extraction zone of step (d) as the above mentioned reflux;

g. recovering said second aromatic fraction from said third rich solvent and passing solvent remaining after said recovery back to said liquid phase extraction zone.

3,844,903

SEPARATING ALPHA, BETA-UNSATURATED CARBOXYLIC ACIDS FROM AQUEOUS SOLUTIONS BY AZEOTROPIC DISTILLATION WITH EXCESS SOLVENT

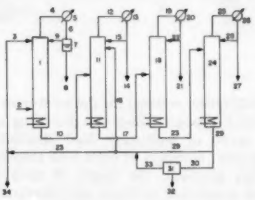
Carl-Heinz Willersinn, and Franz Reicheneder, both of Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Apr. 27, 1972, Ser. No. 248,169

Claims priority, application Germany, Apr. 29, 1971, 2121123

Int. Cl. B01d *3/36;* **C07c** *57/04*

U.S. Cl. 203—51 **12 Claims**



1. In a process for recovering acrylic acid from an aqueous solution containing from 10 to 80 percent by weight of acrylic acid, 20 to 80 percent water and byproducts of the propylene oxidation process selected from the group consisting of acetic acid, maleic acid and maleic anhydride, the improvement comprising: distilling off water from said aqueous solution azeotropically in a distillation column while adding an amount of a hydrophobic organic solvent which is from 100 to 5,000 times greater than that required for the azeotropic removal of the water, which hydrophobic organic solvent boils at higher temperatures than acrylic acid, does not form azeotropes with said acids and maleic anhydride and, under the conditions of the azeotropic distillation, boils at least 20° C higher than maleic anhydride up to 300° C and withdrawing the acrylic acid and the bulk of the hydrophobic organic solvent from the bottom of said column.

3,844,904
ANODIC OXIDATION OF GALLIUM PHOSPHIDE

Joseph Yahalom, Haifa, Israel, assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 342,462, March 19, 1973,. This application Feb. 7, 1974, Ser. No. 440,395

Int. Cl. C23b *11/02*

U.S. Cl. 204—56 R **8 Claims**

1. A process for the anodic oxidation of III–V semiconductor compounds carried out in an electrolyte with an anodizing current characterized in that the anodizing current is greater than one mA/cm² the electrolyte is buffered with a buffer concentration of between 0.01M and 1.0M and the pH is between 4 and 7.

3,844,905
TESTING A TOXIC AGENT ALARM WITH A NONTOXIC SIMULANT

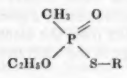
Joseph Epstein, and Lewis M. Berkowitz, both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1972, Ser. No. 256,514

Int. Cl. B01k *1/00*

U.S. Cl. 204—1 T **4 Claims**

1. A method of testing or challenging an alarm for the detection of toxic G and V agents by using a simulant compound which has no significant toxicity, said alarm including an electrochemical cell with a silver electrode for the detection of CN^-ions, said cell having an electrolyte including an oxime for reaction with phosphonofluoridates or G agents or analogs, whereby CN^-ions are generated, said alarm further including $AgNO_3$ and KF for the conversion of V agents to G analogs, comprising the steps of providing an air sample containing said simulant compound having the formula



wherein R is any C_1 through C_{12} alkyl group, reacting said compound of the air sample with the $AgNO_3$ and KF to produce the corresponding fluoridate, passing said fluoridate to the electrochemical cell and reacting said fluoridate with the oxime in the electrolyte of the electrochemical cell of the alarm to produce CN^-ions in the cell electrolyte, reacting the CN^-ions at the silver electrode of the electrochemical cell to produce a change in potential, and monitoring the change in potential to determine the alarm challenge.

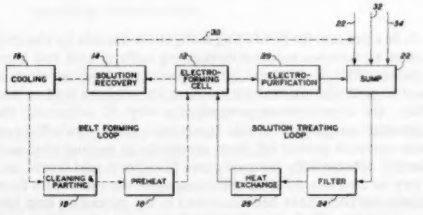
3,844,906
DYNAMIC BATH CONTROL PROCESS

Raymond E. Bailey, and Douglas A. Kreckel, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 251,045, May 8, 1972, abandoned. This application May 21, 1973, Ser. No. 362,592

Int. Cl. C23b *7/02*; **B01k** *3/00*

U.S. Cl. 204—9 **19 Claims**



1. A process for maintaining a continuous and stable aqueous nickel sulfamate electroforming solution adapted to form a relatively thin, ductile, seamless nickel belt by electrolytically depositing nickel from said solution onto a support mandrel and thereafter recovering said nickel belt by cooling said nickel coated mandrel effecting a parting of the nickel belt from the mandrel due to different respective coefficients of thermal expansion comprising:

establishing an electroforming zone comprising a sulfur depolarized nickel anode and a cathode comprising said support mandrel, said anode and cathode being separated by said nickel sulfamate solution maintained at a temperature of about 140° to 160° F. and having a current density therein ranging from about 200 to about 400 amps/ft²;

imparting sufficient agitation to said solution to continuously expose said cathode to fresh solution;

maintaining said solution within said zone at a stable equilibrium composition comprising:

Total Nickel	12.0 to 15.0 oz/gal
Halide as $NiX_2 \cdot 6H_2O$	0.11 to 0.23 moles/gal
H_3BO_3	4.5 to 6.0 oz/gal

electrolytically removing metallic and organic impurities from said solution upon egress thereof from said electroforming zone:

continuously charging to said solution about 1.0 to 2.0 × 10^{-4} moles of a stress reducing agent per mole of nickel electrolytically deposited from said solution;

passing said solution through a filtering zone to remove any solid impurities therefrom;

cooling said solution sufficiently to maintain the temperature within the electroforming zone upon recycle thereto at about 140° to 160° F. at the current density in said electroforming zone; and

recycling said solution to said electroforming zone.

3,844,907
METHOD OF REPRODUCING MAGNETIZATION PATTERN

Tatsuji Kitamoto; Masashi Aonuma, and Kazuhiro Kawaziri, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 129,131, March 29, 1971, Pat. No. 3,759,796. This application Aug. 17, 1973, Ser. No. 389,085

Claims priority, application Japan, Mar. 27, 1970, 45-25712

Int. Cl. C04b *35/00*; **C23b** *7/02*; **G11b** *5/00*

U.S. Cl. 204—12 **10 Claims**

1. A method for reproducing an original magnetization pattern of a substrate which has a low coercivity of not less than 300 Oe to form a master of high coercivity capable of repeated use, said high coercivity ranging from 1.5 to 3.0 times said low coercivity, said method comprising plating onto the low coercivity substrate a ferromagnetic material of high coercivity therby forming a plated magnetic film of said ferromagnetic material of high coercivity, said plated magnetic film having the same magnetization pattern as said original magnetization pattern.

3,844,908
PROCESS FOR COLORING ALUMINUM AND ALUMINUM ALLOYS

Hiroto Matsuo, and Tadamitsu Nakamura, both of Saitama-ken, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1972, Ser. No. 310,442

Claims priority, application Japan, Dec. 24, 1972, 47-104669

Int. Cl. C23b *9/02*; **C23f** *17/00*

U.S. Cl. 204—35 N **13 Claims**

1. A process for coloring aluminum and aluminum alloys, which comprises:

anodically oxidizing a membrane of aluminum or an aluminum alloy at a temperature of from 15° – 35°C in a solution containing from 0.1 – 30% by weight of a phosphorous oxide acid or an acid mixture of a phosphorous oxide acid and from 50 to 150% by weight of a second acid based on the amount of phosphorous oxide acid used, wherein the total concentration of said acid mixture ranges from 0.1 – 30% by weight and treating said membrane with an aqueous pigment dispersion consisting essentially of water, a pigment and a dispersing agent, whereby the pigment is impregnated into the porous surface of the membrane.

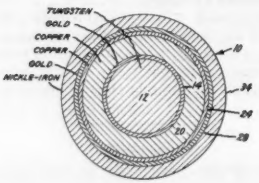
3,844,909
MAGNETIC FILM PLATED WIRE AND SUBSTRATES THEREFOR

Richard O. McCary, and Fred E. Luborsky, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 89,002, Nov. 12, 1970, Pat. No. 3,753,665, which is a continuation-in-part of Ser. No. 658,942, Aug. 7, 1967, abandoned. This application Feb. 9, 1973, Ser. No. 330,955

Int. Cl. C23b *5/46, 5/58*

U.S. Cl. 204—40 **8 Claims**



1. The method of making magnetic film plated wire for memory devices comprising the steps of:

electrolytically depositing on a gold clad wire, having a core selected from the group consisting of tungsten and molybdenum, a first copper layer to produce a first surface geometry;

electrolytically depositing on said first copper layer a second copper layer to produce a different surface geometry from said first surface geometry; and

electrolytically depositing on said second copper layer of magnetic film, selected from the group consisting of nickel-iron and alloys thereof.

3,844,910
PROCESS FOR THE PRODUCTION OF METAL COATINGS

Alfred Lipp, Bad Worishofen, and Gunter Kratel, Sankt Mang, both of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Germany

Filed July 19, 1973, Ser. No. 380,823

Claims priority, application Germany, July 25, 1972, 2236443

Int. Cl. C23b *5/00*

U.S. Cl. 204—45 R **6 Claims**

1. Process for the production by electroplating of metallic coatings containing embedded therein nonmetallic, solid materials having a grain size not greater than 10 microns, which comprises incorporating in the electroplating baths containing said solid materials 0.1 – 3.0 percent, by weight, of at least one amino-organosilicon compound, based on the weight of said nonmetallic solid materials to be embedded in said metallic coatings.

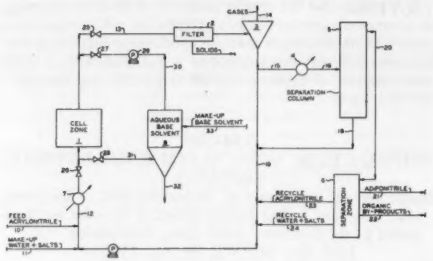
3,844,911
METHOD FOR PRODUCING ADIPONITRILE

Forrest N. Ruehlen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 27, 1972, Ser. No. 275,556

Int. Cl. C07b *24/06*; **C07c** *121/02, 121/26*

U.S. Cl. 204—73 A **14 Claims**



1. In a method for producing adiponitrile by electrolysis of an acrylonitrile composite stream passing through an undivided electrolytic cell having a cathode and an anode, the improvement comprising:

periodically terminating flow of the acrylonitrile composite stream to the cell;

passing a wash stream through the cell in contact with the cathode and the anode, said wash stream being a strong base aqueous solution having a concentration in the range of about 1–20 weight percent base compound in the solution;

continuing to pass the wash stream through the cell in contact with the electrodes for a period of time sufficient for removing deposits from the electrodes;

terminating the passage of the wash stream through the cell; and

initiating passage of the acrylonitrile composite stream through the cell and the production of adiponitrile.

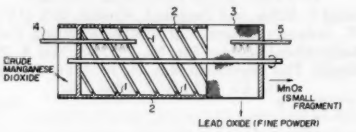
3,844,912
PROCESS FOR TREATING ELECTROLYTIC MANGANESE DIOXIDE

Masakazu Shuin, Takehara, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Chuo-ku, Tokyo, Japan

Filed July 5, 1973, Ser. No. 376,452

Int. Cl. C01b *13/14*

U.S. Cl. 204—96 **4 Claims**

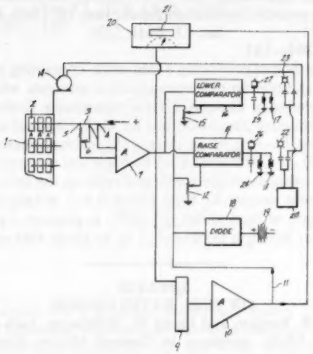


1. In a process for producing manganese dioxide by electrolysis of an aqueous solution containing sulfuric acid and manganous sulfate in an electrolytic apparatus, whosé members in contact with the electrolytic solution are made of lead or lead alloy, the improvement comprises a step of subjecting the deposited manganese dioxide layers having lead oxide films on their surfaces peeled off from an anode to mutual abrasion, thereby substantially removing said films from said layers, and a step of coarsely dividing the manganese dioxide layers from which said films have been removed in the preceding step into pieces of 1 to 15 mm in particle diameter, and washing with water or an alkaline solution, thereby removing a sulfate ion-containing compound occluded in said pieces.

3,844,913
METHOD FOR REGULATING ANODE-CATHODE SPACING IN AN ELECTROLYTIC CELL TO PREVENT CURRENT OVERLOADS AND UNDERLOADS

Jack Warren, Irvington, N.Y., assignor to Olin Corporation, New Haven, Conn.

Filed May 10, 1973, Ser. No. 359,152
Int. Cl. C01d 1/08; C22d 1/04
U.S. Cl. 204—99 10 Claims



1. In a method for continuously protecting electrodes against current overloads or underloads in an electrolytic cell containing an electrolyte decomposable by electric current, said electrolyte being in contact with said electrodes, said electrodes being comprised of at least one adjustable anode set and a liquid cathode in spaced relationship, applying a current to each said anode set through at least one conductor, detecting a signal corresponding to said current in said conductor, compensating said signal for temperature variation in said conductor to produce a temperature-compensated signal, amplifying said temperature-compensated signal to produce an amplified signal, generating an average signal representing amplified signals from each said anode set in said cell, the improvement which comprises:

a. generating a collective signal proportional to said average signal,
b. selecting individually for each anode set a first portion of said collective signal as an upper reference signal,
c. selecting individually for each anode set a second portion of said collective signal as a lower reference signal, the differences between said upper reference signal and said lower reference signal representing the operating current range for said anode set,
d. comparing said amplified signal with said upper reference signal and said lower reference signal, and
e. adjusting the space between said anode set and said cathode when said amplified signal falls outside said operating current range.

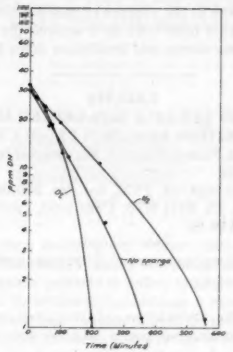
3,844,914
PHOTOLYTIC PURIFICATION OF AQUEOUS SOLUTIONS CONTAINING NITROPHENOL COMPOUNDS

Craig B. Murchison, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 4, 1973, Ser. No. 394,010
Int. Cl. B01j 1/10
U.S. Cl. 204—158 R 16 Claims

1. A method of treating an aqueous solution containing a nitrophenol compound to decompose said compound comprising:

irradiating the aqueous solution at a pH of about 3.5 or less with ultraviolet radiation of sufficiently short wavelength

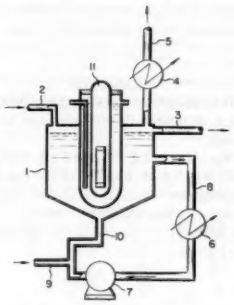


for a sufficient period of time to decompose substantially all of said compound.

3,844,915
PROCESS FOR PREPARING ORGANOCHLOROSILANES

Minoru Takamizawa; Takayoshi Hayashi, and Masatoshi Takita, all of Annaka, Japan, assignors to Shinetsu Chemical Company, Chiyoda-ku, Tokyo, Japan

Filed Aug. 1, 1972, Ser. No. 276,909
Claims priority, application Japan, Aug. 2, 1971, 46-58147The portion of the term of this patent subsequent to Mar. 15, 1989, has been disclaimed.
Int. Cl. B01j 1/10
U.S. Cl. 204—158 R 8 Claims



1. In the process for preparing aromatic group containing organochlorosilanes comprising irradiating, in the presence of chlorine, a liquid mixture of a chlorosilane having the general formula

$$(CH_3)_3\text{-}Cl_nSiH$$

wherein n is an integer of 2 or 3 and an aromatic compound having the general formula

wherein Z is hydrogen, halogen, or a monovalent organic radical selected from the group consisting of alkyl, haloalkyl, alkoxy, phenyl, halophenyl, phenoxy, phenylmethylene, and

dialkylamino radicals, the irradiation being carried out with light, at least 30 percent of whose rays have wavelengths not exceeding 3,800 Angstrom, the improvement which comprises the step of bringing said chlorine into admixture with said liquid mixture in the absence of said irradiation and then introducing, within from 0.01 to 1 second, the resulting admixture to a zone where said irradiation takes place.

3,844,916
RADIATION CURABLE NON-GELLED MICHAEL ADDITION REACTION PRODUCTS

Joseph E. Gaske, Mount Prospect, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Sept. 18, 1972, Ser. No. 290,068
Int. Cl. B01j *1/10;* **C08f** *1/60, 29/36*
U.S. Cl. 204—159.16 **9 Claims**

1. An ultraviolet curable composition comprising: (1) a radiation curable liquid, non-gelled Michael addition reaction product of an aliphatic amine containing a single amino hydrogen atom with a stoichiometric excess of a polyester of acrylic acid with a polyhydric alcohol, said amine constituting at least 5 percent of said reaction product; and (2) a photosensitizer rendering the product sensitive to ultraviolet radiation.

3,844,917
PROCESS FOR THE PREPARATION OF RING-CHLORINATED ALKYLBENZENES

Bernard Miller, Amherst, Mass.

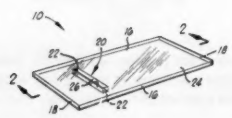
Filed Dec. 20, 1971, Ser. No. 210,231
Int. Cl. B01j *1/10;* **C07c** *17/12*
U.S. Cl. 204—163 R **3 Claims**

1. A method for preparing ring-chlorinated alkylbenzenes by reacting a compound selected from the group consisting of benzenesulfonyl chlorides bearing alkyl groups of one to six carbons on the ring and benzenesulfonyl chlorides bearing cycloalkyl groups of one to six carbons on the ring with chlorine in the presence of light of between 300 and 500 mμ, and then with a reducing agent consisting of a metal and a solvent containing active hydrogen atoms to remove any nonaromatic halogens introduced in the chlorination step.

3,844,918
STABILIZING MEDIA TEMPLATE

Leo P. Cawley, Wichita, Kans., assignor to Bioware, Inc., Wichita, Kans.

Division of Ser. No. 242,872, April 10, 1972, , which is a division of Ser. No. 9,624, Feb. 9, 1970, Pat. No. 3,691,054.
This application Nov. 26, 1973, Ser. No. 419,137
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **5 Claims**



1. A process for electrophoresis and immunoelectrophoresis comprising:
   a. coating one side of a sheet member having at least one aperture therethrough with a stabilizing media gel,
   b. allowing said stabilizing media to harden wherein said aperture in combination with said hardened stabilizing media gel form at least one well,
   c. depositing a sample to be tested within said well,
   d. inoculating said sample to be tested,
   e. treating electrophoretically said stabilizing media coated sheet member,
   f. staining said electrophoretically treated sheet member of step (e) to analyze said sample, and
   g. scanning said stained electrophoretically treated sheet member of step (f) for results.

3,844,919
METHOD OF PREPARING PHOTOSENSITIVE SURFACES

Shunsuke Shiota, Yokahama, and Takao Sohtome, Tokyo, both of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan

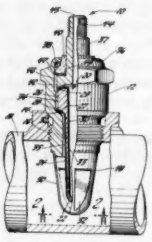
Continuation of Ser. No. 42,501, June 1, 1970, abandoned.
This application Nov. 6, 1972, Ser. No. 303,865
Claims priority, application Japan, June 10, 1969, 44-45633
Int. Cl. B01k *5/00*
U.S. Cl. 204—181 **7 Claims**

1. A method of producing a zinc oxide-containing photosensitive layer upon an electroconductive substrate which comprises forming a disperse system comprising finely divided photoconductive zinc oxide and for each 100 g. of zinc oxide from about 15–30 g. of an electrically insulating resin in from about 400 – 1,000 cc. of liquid medium and electrodepositing said zinc oxide associated with said resin on the said substrate at a current density of from about 0.5–2 mAmp./dm² at a temperature of from about 10°–25°C. to produce a photosensitive layer having a thickness of up to about 400 microns.

3,844,920
AIR FUEL RATIO SENSOR

Richard R. Burgett, and Bruce W. Holleboom, both of Grand Blanc, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1973, Ser. No. 417,724
Int. Cl. G01n *27/46;* **F02m** *7/00*
U.S. Cl. 204—195 S **6 Claims**



1. An exhaust gas sensor for measuring the relative presence of oxygen in an exhaust system comprising: a hollow metal shell having a shoulder therein, a first metal gasket on said shoulder, a conically shaped hollow zirconia element positioned within said hollow metal shell on said gasket having one end closed and thin walls tapering from the thinnest section that begins at the closed end and terminates in a thicker section at the opposite end, which end has an enlarged diameter that forms a top shoulder and a bottom shoulder, said zirconia element having a platinum coating on the inside and outside surfaces including the top and bottom shoulders to form inner and outer electrodes on said zirconia element with the enlarged diameter portion between the top and bottom shoulders being uncoated, said bottom shoulder of said zirconia element being in contact with said first metal gasket to form a first electrical contact means between said outer shell and said outer electrode, a second metal gasket on the top shoulder of said zirconia element that provides electrical contact with the inner electrode on said zirconia element and a metal body member placed thereon forming a second contact means with a terminal on said body member, said outer metal shell including clamping means to retain said zirconia body, said gaskets and said body member in a gas tight relationship, and

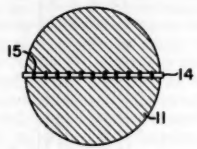
mica means between said body member and clamping means to compensate for the different expansion and contraction rates of the different components assembled in gas tight relationship to maintain such relationship through the operating life of the sensor.

3,844,921

ANODE CONTAINING PIN-TYPE INSERTS

Risque L. Benedict, Santa Monica, Calif., assignor to Esso Production Research Company, Houston, Tex.

Filed Dec. 18, 1972, Ser. No. 315,768
Int. Cl. C23f *13/06*; B01k *3/06*
U.S. Cl. 204—196 **10 Claims**



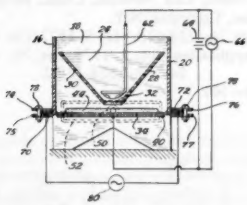
1. An anode for a cathodic protection system or similar electrolytic process which comprises a lead metal anode body; a plurality of pins extending into said body from the outer surface thereof, said pins being made of a base metal selected from the group consisting of tantalum, titanium, niobium, zirconium, vanadium and alloys thereof and being coated with a noble metal from Group VIII of the Periodic Table; and means for applying an electric current to said anode body.

3,844,922

APPARATUS FOR ELECTROLYTIC ETCHING

Charles J. Trzyna, Long Grove, and Quentin R. Kranz, Barrington Hills, both of Ill., assignors to Metalectric, Inc., Barrington, Ill.

Division of Ser. No. 172,505, Aug. 17, 1971, Pat. No. 3,749,653. This application July 11, 1973, Ser. No. 378,199
Int. Cl. B01k *3/00*
U.S. Cl. 204—228 **9 Claims**



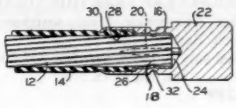
1. In electrolytic etching apparatus wherein a metal anode-workpiece and a cathode are positioned in a tank containing an electrolytic solution and a voltage source is connected across said anode and cathode to etch uncovered portions of said workpiece, the improvement comprising, in combination: one surface of said cathode facing said anode, said anode-facing surface having connected thereto a pair of spaced electrically conductive leads, and means for applying an alternating electric potential across said leads while the voltage from said voltage source is simultaneously applied across said anode and cathode.

3,844,923

DANGLER ASSEMBLY FOR ELECTRO-CHEMICAL INSTALLATIONS

Paul W. Sandrock, 4792 Ranchwood Rd., Akron, Ohio 44313

Filed Aug. 2, 1973, Ser. No. 385,069
Int. Cl. C23b *5/78*; B01k *3/00*
U.S. Cl. 204—279 **3 Claims**



1. A dangler assembly for an electrochemical installation comprising:

a. an electrical conductor,

b. a metallic sleeve encasing one end of said conductor,

c. a metallic pin embedded in said end concentric therewith, and,

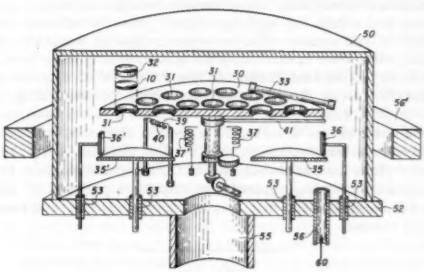
d. a contactor encasing said metallic sleeve in compression, whereby said conductor is compressed between said metallic sleeve and said concentric pin.

3,844,924

SPUTTERING APPARATUS FOR FORMING OHMIC CONTACTS FOR SEMICONDUCTOR DEVICES

James A. Cunningham, Richardson, and Coy D. Orr, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 67,654, Aug. 3, 1970, Pat. No. 3,667,005, which is a division of Ser. No. 561,845, June 30, 1966, Pat. No. 3,616,401. This application Mar. 1, 1972, Ser. No. 230,711
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **5 Claims**



1. A sputtering apparatus for sequentially depositing a plurality of thin films upon the surface of semiconductor substrates, comprising in combination:

a. chamber means having inlet and outlet means for providing a confined zone of low pressure;

b. support means rotatably mounted in said chamber means for supporting said substrates so that at least a downwardly facing surface thereof is exposed;

c. at least two cathodes mounted in said chamber means below said support means;

d. a plurality of spaced electrodes mounted in said chamber means below said support means and above said cathode for producing a glow discharge of charged ions between said support means and each cathode;

e. voltage means for sequentially applying a voltage to each of said cathodes so as to selectively charge each cathode and cause said charged ions to strike each cathode with

sufficient energy to cause upward sputtering thereof and deposition of a thin film of material upon the exposed surfaces of said substrates; and

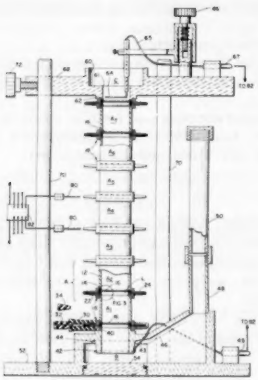
f. means for rotating said support means and for thereby transporting said substrates to a sequence of positions necessary to receive a uniform sputtered deposit from each cathode.

3,844,925

MOLECULAR FRACTIONATION

Dimitri Stathakos, Cambridge, Mass., assignor to Center for Blood Research, Boston, Mass.

Filed July 2, 1973, Ser. No. 375,659
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **16 Claims**



1. In apparatus for isoelectric fractionation of charged molecules comprising a solid phase container defining a column and means for applying electric potential between the ends of said column effective upon ampholyte molecules in said solid phase to establish a pH gradient along the column, whereby desired molecules can migrate to and accumulate at positions along the length of the column corresponding to their isoelectric points, the improvement wherein said container comprises a series of separable segments, normally three or more, each defining a portion of the length of the solid phase column through which the molecules migrate, the segments including supports for respective portions of said solid phase whereby they may be individually removed from said column.

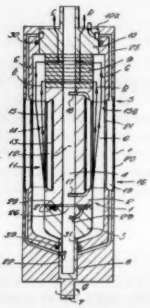
3,844,926

SEPARATION APPARATUS

Michael James Smyth, Newbury; Robert Murdoch, Reading, and John Anderson Gibson, Abingdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 4, 1973, Ser. No. 393,950
Claims priority, application Great Britain, Sept. 6, 1972, 41435/72
Int. Cl. B01d *13/02*; **B01k** *5/00*
U.S. Cl. 204—299 **7 Claims**

1. In a separation apparatus comprising a substantially uninterruped annular chamber bounded by substantially coaxial outer and inner walls, inlet means by which migrant material and a migrant-supporting fluid can be introduced into the annular chamber at a first region thereof, means for generating a force field by which the migrant material in the annular chamber can be subjected to a force field to produce a differential response, as regards movement in a direction radially of the chamber, between the migrant and the supporting fluid and/or between fractions of the migrant, outlet means for selectively removing from the annular chamber, at further regions remote from the first region, the supporting fluid with or without separated fractions of the migrant, and means adapted to permit a relative rotation between the inner and outer walls about the common axis thereof thereby to stabilise flow conditions in the flow chamber, at least said outer wall being rotatable about said axis the improvement wherein the inlet means comprises a plurality of orifices which communicate with an annular opening for introducing migrant material into the annular chamber, a migrant material supply means, a porous material positioned between the migrant material supply means and the orifices, and means constraining the



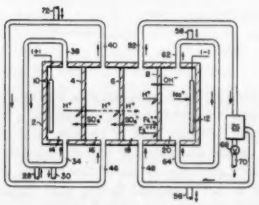
migrant material to pass through the porous material, the arrangement being such that migrant material from the supply means passes through the porous material into the orifices, and thence into the annular opening and into the annular chamber; and the outlet means comprises a plurality of collecting chambers, each collecting chamber having a collecting chamber inlet distributed around the collecting chamber and having interconnected channels for conducting a separated fraction from the collecting chamber inlet and along a plurality of non-linear paths to converge at chamber outlet means disposed within the chamber, the arrangement being such that the minimum path length for the separated fraction from the collecting chamber inlet to the chamber outlet means is the same from all points on the collecting chamber inlet.

3,844,927

ELECTRODIALYTIC RECOVERY OF ACID AND INSOLUBLE PRODUCTS FROM SPENT LIQUORS

Richard N. Smith, East Norwalk, Conn., assignor to Sybron Corporation, Rochester, N.Y.

Division of Ser. No. 250,625, May 5, 1972, Pat. No. 3,788,959. This application Nov. 1, 1973, Ser. No. 411,652
Int. Cl. B01d *13/02*
U.S. Cl. 204—301 **9 Claims**



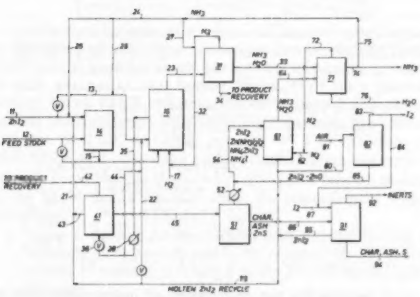
1. An electrodialytic apparatus for the regeneration and concentration of acid from a mixture of said acid and metal in

solution comprising, a frame having in sequence therein an anode chamber adapted to contain circulating anolyte and having an anode with a surface in the anode chamber adapted to be in contact with the anolyte; at least one concentrating chamber adapted to contain circulating electrolyte; a spent liquor chamber adapted to contain a circulating mixture of said acid and metal in solution; a cathode chamber adapted to contain circulating catholyte having a cathode with a surface in the cathode chamber adapted to be in contact with the catholyte; ion permeable membranes separating said chambers, the membrane separating the cathode chamber from the spent liquor chamber being an anion permselective membrane having one side disposed in the cathode chamber and the other side disposed in the spent liquor chamber, the ion permeable membrane separating the anode chamber and the concentrating chamber having one side disposed in the anode chamber and the other side disposed in the concentrating chamber, and the ion permeable membrane separating the concentrating chamber and the spent liquor chamber being of the type permitting the migration of anions and having one side disposed in the concentrating chamber and the other side disposed in the spent liquor chamber; an inlet and outlet means for each chamber and means for circulating said anolyte, catholyte, electrolyte and mixture of said acid and metal in solution through the respective chambers; and means for imposing a difference in potential across the anode and cathode.

3,844,928
HYDROCRACKING HEAVY HYDROCARBONACEOUS MATERIALS IN MOLTEN ZINC IODIDE

Douglas O. Geymer, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 10, 1973, Ser. No. 359,159
Int. Cl. C10g 1/06
U.S. Cl. 208—10 **5 Claims**



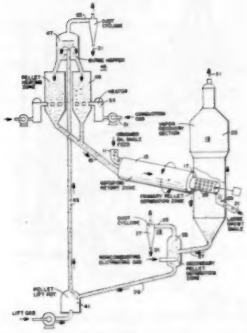
1. In a continuous process of hydrocracking coal in a hydrocracking zone containing a continuous phase catalyst system of a molten salt mixture consisting essentially of zinc iodide containing a compatible melting point depressant, wherein (1) the feedstock is contacted with the molten salt mixture in the presence of hydrogen at a partial pressure of from about 500 to about 5,000 psig and at a temperature of from about 300°C to about 500°C, (2) oil products are separated from the molten salt catalyst system, (3) resulting spent catalyst is withdrawn from the hydrocracking zone and is separately regenerated whereby ammonia complexed with zinc iodide is removed therefrom, and wherein (4) the regenerated zinc iodide is returned to the hydrocracking zone, the improvement which comprises:

maintaining a mol ratio of ammonia to zinc iodide of from about 0.25 to about 0.75 in the catalyst system in the hydrocracking zone, the mols of ammonia calculated as the NH_3 content of ammonia and zinc ammonia iodide complex, and the mols of zinc iodide calculated as the ZnI_2 content of all zinc iodide-containing salt.

3,844,929
RETORTING OIL SHALE WITH SPECIAL PELLETS

Donald K. Wunderlich, and James L. Skinner, both of Richardson, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 284,288, Aug. 28, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,200
Int. Cl. C10b 53/06
U.S. Cl. 208—11 **25 Claims**



1. A method for retorting crushed oil shale containing carbonaceous organic matter and mineral matter comprising

a. feeding crushed oil shale and pellets to a rotating retort zone, said pellets being comprised of particulate heat carriers being in a size range between 0.5 inch and approximately 0.055 inch and having a surface area of between 10 and 150 square meters per gram of pellets, said pellets being at a retort zone inlet temperature between 1,000°F. and 1,400°F. and in a quantity such that the ratio of said heat-carrying pellets to said crushed oil shale in said retort zone on a weight basis is between one and three, said ratio also being such that the sensible heat in said pellets is sufficient to provide at least fifty percent of the heat required to heat said crushed oil shale from its retorting zone feed temperature to a retort zone outlet temperature of between 800°F. and 1,050°F.;

b. tumbling said crushed oil shale and said pellets in said retort zone to retort oil vapors frm said crushed oil shale and form particulate spent shale and a combustible carbon-containing deposition on said pellets;

c. causing said pellets and said spent shale to pass from said retort zone to a particle separation zone and separating from said pellets at least 75 percent by weight of the total spent shale and at least 95 percent by weight of the portion of said spent shale that is smaller in size than said pellets prior to burning said combustible carbon-containing deposition on said pellets;

d. recovering said oil vapors generated by retorting said crushed oil shale;

e. lifting said pellets from said separation zone to a pellet deposition burning zone;

f. heating said pellets in said pellet deposition burning zone to an outlet temperature of between 1,000°F. and 1,400°F. by burning at least a portion of said combustible carbon-containing deposition with a combustion supporting gas; and

g. returning said heated pellets to said retort zone in step (a) for retorting crushed oil shale.

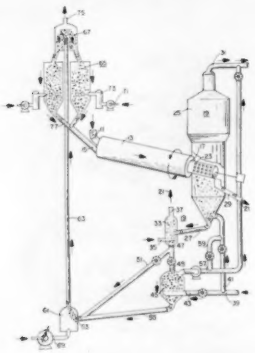
3,844,930
RETORTING OIL SHALE WITH SPECIAL PELLETS AND STEAM STRIPPING

Donald K. Wunderlich, and James L. Skinner, both of Richardson, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 285,732, Sept. 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 284,288, Aug. 28, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,119

Int. Cl. C10b *53/06*

U.S. Cl. 208—11 **40 Claims**



1. In a method for retorting crushed oil shale containing carbonaceous organic matter and mineral matter wherein oil shale is retorted by contacting said oil shale with hot pellets in a retort zone to gas and oil products, particulate spent shale, and an organic combustible deposition on said pellets and said spent shale, said pellets having been heated in a pellet deposition burning zone to a retort zone inlet temperature of between 1,000°F. and 1,400°F. mainly by combustion of a combustible carbon-containing deposition on said pellets, said pellets being in amount sufficient to provide at least 50 percent of the heat required to vaporize a major portion of the carbonaceous matter from said oil shale and to heat said crushed oil shale from its retort zone inlet temperature to a retort zone outlet temperature of between 800°F. and 1,150°F., and wherein said gas and oil products are separated and recovered, the improvement comprising contacting in a first steam stripping zone at least a portion of said pellets from said retort zone with steam to remove a portion of said combustible deposition on the contacted pellets, the temperature in said first steam stripping zone being between 800°F. and 1,150°F., recovering at least a portion of the removed portion of said combustible deposition, and passing said contacted pellets to said pellet deposition burning zone.

3,844,931
METHOD OF MANUFACTURING SPECIAL SOLVENT

Tadashi Ishiguro; Akio Okagami; Shinichi Igeta; Shimpei Gomi, and Masaaki Takahaski, all of Tokyo, Japan, assignors to Japan Gasoline Company, Ltd., Chiyoda-ku, Tokyo and Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo, both of, Japan

Filed June 23, 1972, Ser. No. 265,808

Claims priority, application Japan, June 30, 1971, 46-48355

Int. Cl. C07c *3/54*

U.S. Cl. 208—46 **5 Claims**

1. A process for producing an alkylated hydrocarbon suitable as a solvent which comprises, reacting (A) hydrocarbon starting material consisting mainly of hydrocarbons boiling in the range of 200°C to 280°C, an index number of more than −100 and a maximum absorption wave-length, λmax, of the ultraviolet absorption spectrum of 220 to 230 mμ,

wherein index number equals δ+0.625b.p. −447, and δ represents the specific dispersion at 20°C and b.p. is the boiling point in °C.,

with (B) an olefin having 2 to 9 carbon atoms, at a temperature in the range of 40° to 380°, at a pressure of 0 to 150 kg/cm² gauge and a liquid residence time of 0.1 to 5.0 hours, in the presence of (C) an acid catalyst until from 0.5 to 2.0 moles of said olefin is reacted per one mole of said starting material, to form an alkylated reaction product,

recovering from said reaction product by distillation an alkylated hydrocarbon fraction having said index number in the range of −100 to 40 and having a boiling range of 260° to 320°C.

3,844,932
PROCESS FOR TREATING BY-PRODUCT HEAVY FRACTIONS FORMED IN THE PRODUCTION OF OLEFINS

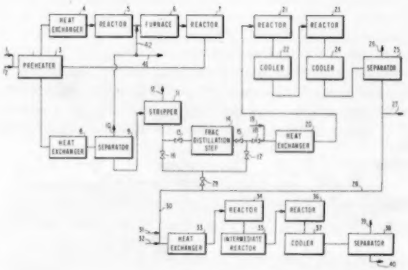
Shinpei Gomi, No. 1-6, Nakamura, Nerima-ku; Masaaki Takahashi, No. 2-23, Azabu-Jyuban, Minato-ku; Tadashi Ishiguro, No. 2-26, Higashishincho, Itabashiku; Akio Okagami, No. 1-3, Nitsuko-cho, Fuchu-shi, all of Tokyo; Kunihiko Uemoto, No. 26-6, Shiratoridai, Midori-ku Yokohama-shi, and Hiroshi Kuribayashi, No. 2-1-6, Fujigaoka, Midori-ku, Yokohama-shi, both of, Kanagawa, all of Japan

Division of Ser. No. 97,231, Dec. 11, 1970, Pat. No. 3,689,401. This application May 19, 1972, Ser. No. 254,982

Claims priority, application Japan, Dec. 11, 1969, 44-99046; Feb. 23, 1970, 45-11341; Feb. 23, 1970, 45-11342

Int. Cl. C10g *37/00*

U.S. Cl. 208—57 **1 Claim**



1. A process for the preparation of hydrocarbon oils of improved quality by treatment of by-product heavy fractions having an initial boiling point of above 160° C and a 75 percent distill-off point of below 450° C and obtained in the production of gaseous olefins by the thermal cracking of hydrocarbons at temperatures above 700° C which comprises:

1. imparting thermal stability to said by-product heavy fractions by treating said fractions with hydrogen at a temperature of from 40° to 200° C, a pressure of from 5 to 300 Kg/cm²G and a liquid residence time of from 0.1 to 5.0 hours in the presence of a metallic nickel-containing catalyst, containing at least 1 percent by weight of reduced nickel and not more than 10 percent by weight, based on the nickel, of a promoter consisting of copper and chromium, said catalyst being prepared by treatment with organic sulfur compounds consisting exclusively of carbon, hydrogen and sulfur atoms to obtain thermally stabilized heavy fractions,

2. hydrorefining the thermally stabilized heavy fractions at a temperature of from 250° to 450° C, a pressure of from 5 to 300 Kg/cm²G and a liquid residence time of from 0.1

to 5.0 hours in the presence of a catalyst containing at least two components selected from the group consisting of cobalt, molybdenum, tungsten and nickel to cause desulfurization and denitrogenation, and

3. reacting the hydrorefined material with hydrogen at a temperature of from 100° to 400° C, a pressure of from 10 to 300 Kg/cm²G and a liquid residence time of from 0.1 to 5.0 hours in the presence of a solid hydrogenating catalyst.

3,844,933

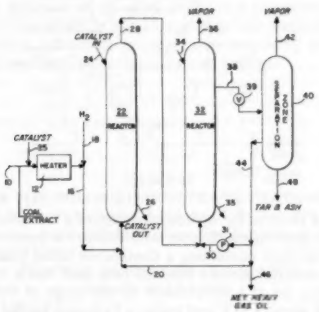
HYDROCONVERSION OF COAL-DERIVED OILS

Ronald H. Wolk, Trenton; Michael C. Chervenak, Pennington, both of N.J., and Seymour B. Alpert, Los Altos, Calif., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Oct. 16, 1972, Ser. No. 297,930The portion of the term of this patent subsequent to Nov. 23, 1988, has been disclaimed.

Int. Cl. C10g *13/02, 13/18*

U.S. Cl. 208—59 **5 Claims**



1. A method for hydroconversion of coal-derived oil having in the order of more than 50 weight percent boiling above 975°F and at least 0.1 weight percent ash to convert in excess of sixty percent of that boiling above 975°F to a fraction boiling below 975°F, wherein the oil is heated and passed upflow through a reaction zone under a hydrogen partial pressure of 2,000 to 3,500 psi and at a temperature of 750°–950°F and containing a particulate catalyst, the upflow velocity being such as to place the catalyst in random motion in the liquid in the reaction zone, the improvement which comprises:

a. using a particulate microspheroidal catalyst having a relatively close particle size in the range of 40–325 mesh, at least 75 percent of which is in the 50–200 mesh (USS) size; and

b. selecting the catalyst from the hydrogenation group including cobalt molybdate on alumina, nickel molybdate on alumina, and mixtures thereof, and having a total pore volume of 0.30 to 0.70 cc/gm, of which 0.20 to 0.40 cc/gm is in pores larger than 250 Angstroms effective diameter and 0.10 to 0.30 cc/gm is in pores smaller than 250 Angstroms.

3,844,934

DUAL CATALYST CONVERTER PROCESS

John C. Bonacci, Cherry Hill, and Kenneth M. Mitchell, Marlton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 6, 1973, Ser. No. 338,467

Int. Cl. C10g *37/10*

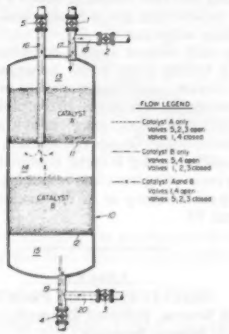
U.S. Cl. 208—66 **1 Claim**

1. A new use for a dual catalyst converter having an upper bed of platinum group metal on alumina reforming catalyst and a lower bed of shape selective hydrocracking catalyst to afford flexibility in operation to pass reactants selectively through both beds in sequence or through either bed alone which comprises:

a. arranging the two discrete beds in spaced apart relation and each spaced from the extremity of the converter adjacent thereto thereby providing a common plenum chamber between the beds and a terminal plenum chamber adjacent each bed on the side thereof remote from the other bed;

b. providing inlet means to the common plenum chamber;

c. providing both inlet means and outlet means to each of the terminal plenum chambers;



d. supplying a naphtha charge convertible by both of said catalysts in sequence to the said terminal plenum chamber adjacent the upper said bed of reforming catalyst and withdrawing conversion products from the other of said terminal plenum chambers whereby the conversions characteristic of said two catalysts are accomplished in sequence; and

e. interrupting the flow recited in (d) and selectively accomplishing conversion by one of said catalyst alone by introducing a naphtha charge convertible by a selected one of said catalyst beds to said common plenum chamber and withdrawing conversion products from the terminal plenum chamber adjacent the said selected catalyst bed.

3,844,935

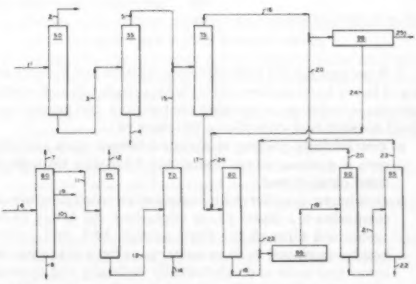
PROCESS FOR PRODUCING LEAD FREE MOTOR FUEL

Lewis E. Drehman, and Floyd E. Farha, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 2, 1973, Ser. No. 320,500

Int. Cl. C10g *39/00*

U.S. Cl. 208—79 **5 Claims**



1. A process for producing high octane number unleaded motor fuel stocks comprising:

processing refinery feedstocks selected from the group consisting of natural gas liquids and crude oil to obtain a first stream comprising liquid hydrocarbons having six carbon atoms;

fractionating said first stream to obtain a second stream comprising hydrocarbons having a boiling point in the isohexane range and a third stream comprising hydrocarbons having a boiling point above the isohexane range;

hydrogenating said third stream to obtain a fourth stream comprising saturated hydrocarbons having six carbon atoms;

isomerizing said fourth stream to obtain a fifth stream comprising isohexane and cyclohexane;

fractionating said fifth stream to obtain a sixth stream comprising cyclohexane and n-hexane and a seventh stream comprising isohexane;

contacting said second stream comprising hydrocarbons having a boiling point in the isohexane range and said seventh stream comprising isohexane in a reforming zone under reforming conditions in the presence of steam in the presence of a reforming catalyst selected from the group consisting of Group VIII metal in combination with a tin-modified Group II metal aluminate; and

separately recovering from said reforming zone a motor fuel blending stock having an ASTM research octane number of at least 95.

3,844,936
DESULFURIZATION PROCESS

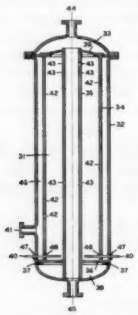
Esmond John Newson, Birkerod, Denmark, assignor to Haldor Topsoe A/S, Soborg, Denmark

Continuation-in-part of Ser. No. 166,139, July 26, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,250

Claims priority, application Great Britain, Aug. 4, 1970, 37659/70

Int. Cl. C10g *13/02, 23/02*

U.S. Cl. 208—108 **5 Claims**



1. A process for the hydrodesulphurization and hydrocracking of heavy hydrocarbon oils including crude oils and residual petroleum fractions at elevated temperature and pressure in a fixed catalyst bed, comprising the steps of

a. continuously passing at elevated temperature and pressure a gaseous phase containing hydrogen through the fixed catalyst bed,

b. simultaneously therewith passing at elevated pressure and temperature a liquid phase containing the heavy hydrocarbon oil through the fixed catalyst bed, said catalyst bed being placed in an annular space between upper and lower end walls and substantially vertically and coaxially disposed, substantially cylindrical walls, at least said cylindrical walls having passage means for fluids, the axial height of said annular space being at least twice its width as measured radially between the two cylindrical walls, wherein a predominant phase of said two phases is introduced into the catalyst bed through the passage means in its outer cylindrical wall and the other phase through passage means in one of the end walls of the catalyst bed,

c. recovering the product hydrocarbon oil via the passage means in the inner cylindrical wall of the catalyst bed, and

d. removing gases formed in the process and unreacted feed gases via passage means in any wall of the catalyst bed other than the bottom end wall and outer cylindrical wall thereof.

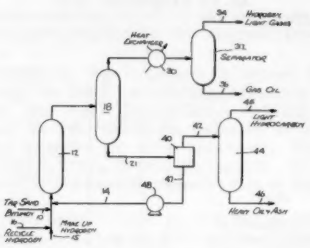
3,844,937
HYDROCONVERSION OF TAR SAND BITUMENS

Ronald H. Wolk, 20 Barnett Rd., Trenton, N.J. 08638

Filed June 18, 1973, Ser. No. 370,809

Int. Cl. C10g *9/16, 13/14*

U.S. Cl. 208—108 **4 Claims**



1. In a process for hydroconversion of a bitumen derived from tar sands in which a tar sand bitumen is passed through a reaction zone containing a continuous liquid phase and a contact material derived from the feed itself and a hydrogen-containing gas at a temperature in the range of from about 700°F to about 950°F and under a hydrogen partial pressure of from about 200 to about 1,500 psi wherein the contact material is maintained in an ebullated state by the passage of fluids through the reaction zone and an ash-containing effluent is removed from the reaction zone, the improvement which comprises:

a. separating said effluent in a separation unit into an ash-depleted fraction and an ash-enriched fraction, and

b. recycling said ash-enriched fraction to the reaction zone to maintain the solids concentration in the reactor liquid from about 4 to about 10 weight percent.

3,844,938
REFORMING OF HYDROCARBON FEED STOCKS WITH A CATALYST COMPRISING PLATINUM AND TIN

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 102,059, Dec. 28, 1970, Pat. No. 3,725,304. This application Feb. 16, 1973, Ser. No. 333,088

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **9 Claims**

1. A process for reforming a hydrocarbon feed stock which comprises heating said charge stock in contact with a catalytic composite at reforming conditions including a pressure of from about 0 to about 1000 psig and a temperature of from about 800° to about 1100° F., said catalytic composite consisting essentially of a tin component in combination with a platinum component on a carrier material, and prepared by the method which comprises:

a. impregnating a high surface area, porous carrier material with a solution of a complex chlorostannate (II)-chloroplatinate anionic species, said solution being stabilized in contact with said carrier material with an aqueous halogen acid; and

b. drying and calcining the impregnated carrier material.

3,844,939

FLOTATION SEPARATION OF FELDSPAR

Akira Katayanagi, No. 11-65, 3-Chome, Kitakyushu, Japan

Filed Mar. 6, 1972, Ser. No. 232,280
Claims priority, application Japan, Mar. 10, 1971, 46-13301
Int. Cl. B03d 1/02
U.S. Cl. 209—166 4 Claims

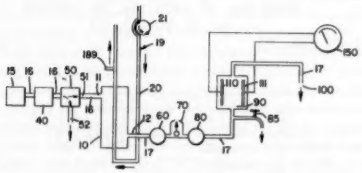
1. A froth flotation process for separating feldspar from quartz-feldspar sands ore consisting essentially of the steps of subdividing said ore to produce at least a fraction having a particle size less than about 1 mm, collecting said fraction and washing the same with water to effect desliming, introducing the washed fraction at a solid concentration of about 20–30 wt percent into an aqueous flotation medium acidified to a pH of about 2–3.5 with sulfuric acid in the absence of hydrofluoric acid, said flotation medium containing about 0.05–0.2 percent by weight of a froth-flotation reagent consisting essentially of (1) a salt with an inorganic or organic acid of an organic mono-, di- or triamine having attached an amino nitrogen atom a long chain aliphatic hydrocarbon group containing, at least about eight carbon atoms and (2) a higher aromatic or aliphatic sulfonate of an alkali metal in a proportion in the range of 5:95–60:40 by weight, agitating said medium to produce a froth containing feldspar, and separating said froth from the medium containing quartz as tailings.

3,844,940

SYSTEM FOR MEASURING ULTRAFILTRATION RATE

J. David Kopf, Tujunga, and Raymond C. Van den Heuvel, Northridge, both of Calif., assignors to David Kopf Systems, Tujunga, Calif.

Filed Apr. 26, 1973, Ser. No. 354,873
Int. Cl. B01d 13/00
U.S. Cl. 210—22 9 Claims



1. A method of measuring the rate of ultrafiltration through a semipermeable membrane wherein a first fluid flows across one surface of said membrane at a first pressure and a conductive second fluid flows across the other surface of said membrane at a second pressure, a portion of said first fluid ultrafiltrating through the membrane into said second fluid, comprising the steps:

stopping the flow of said second fluid across said semipermeable membrane,

maintaining the pressure differential between said first and second pressures across said semipermeable membrane so that said first fluid continues to ultrafiltrate into said second fluid,

passing a flowstream of the ultrafiltrating first fluid and said conductive second fluid into an electric field of constant potential and oriented in a direction transverse to the path of said flowstream, and

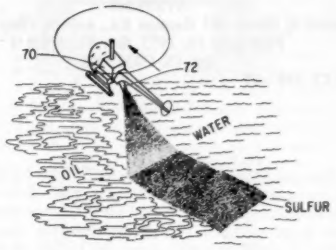
sensing the increased electrical flow through said flowstream in said electric field as a function of time.

3,844,941

USE OF SULFUR FOR COMBATTING OIL SPILLS

Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Feb. 1, 1971, Ser. No. 111,418
Int. Cl. C02b 9/02
U.S. Cl. 210—40 29 Claims



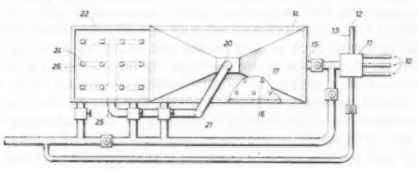
1. A method of combatting the problem of oil on a body of water which comprises depositing elemental sulfur on said oil.

3,844,942

PROCESS FOR AIR POLLUTION ABATEMENT

Ernest C. Barber, Cherry Hill, N.J., assignor to Texaco, Inc., New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,777
Int. Cl. B01j 9/04
U.S. Cl. 210—50 2 Claims



1. A process for catalytically removing hydrogen sulfide contained in water produced from a subterranean hydrocarbon reservoir comprising

a. dissolving a catalytic amount of a soluble transition metal salt in the hydrogen sulfide ladened water,

b. introducing the hydrogen sulfide ladened water and catalyst into a covered container which is gas tight and is at atmospheric pressure,

c. introducing an amount of oxygen into the water in the container which is at least stoichiometric with the amount of hydrogen sulfide dissolved in the water,

d. dissolving the oxygen in the water by mixing to effect a reaction between the oxygen and hydrogen sulfide,

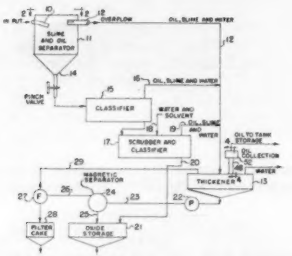
e. collecting any hydrogen sulfide which evolves from the water in the container,

f. dissolving this collected hydrogen sulfide into water from said covered container containing dissolved catalyst in a second container,

g. dissolving sufficient additional oxygen into the water in the second container to at least stoichiometrically convert all the said collected hydrogen sulfide to elemental sulfur, and

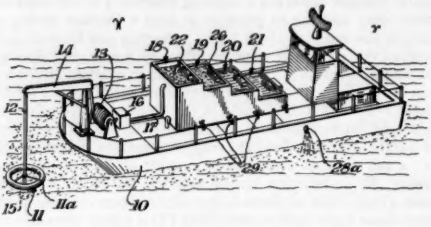
h. repeating steps *e* through *g* in additional containers, as needed, until essentially all of the hydrogen sulfide is reacted.

3,844,943
METHOD AND APPARATUS FOR PROCESSING WASTE WATER SLIMES OF STEEL MILL WATER TREATMENT SYSTEMS
Leonard A. Duval, 207 Harmon Rd., Aurora, Ohio 44202
Filed June 18, 1973, Ser. No. 370,971
Int. Cl. C02c *5/00*
U.S. Cl. 210—67 **2 Claims**



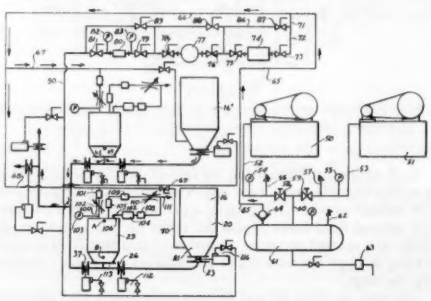
1. A method for processing a stream of waste water slimes of steel mill water treatment systems where the waste water contains iron oxides, liquid oils, heavy oil particles, and a slime of finely divided particles of waste materials and water; comprising first separating lighter components such as said liquid oils and said slimes and most of said water from heavier components such as said oxides and heavy oil particles and much of said fine waste particles by introducing the initial stream in a tangential, non-turbulent, downward flow in a vertical, generally cylindrical vessel; discharging said heavier components at the bottom of said vessel and discharging said light components at the top of said vessel; controlling the flow of said waste water and contents in said vessel by varying the flow of said discharging heavier components and by varying the angle of said inlet stream downwardly relative to the horizontal and tangentially relative to the wall of said vessel; secondly passing said heavier components through a classifier so as to separate the heavier components still in the stream, mostly oxides, from the lighter components which enter the classifier; thirdly passing the heavier components discharged from said classifier through a combined scrubber and classifier, while feeding extra water and a solvent from said heavy oil particles into said scrubber and classifier; fourthly passing the heavier components discharged from said scrubber and classifier, mostly oxides, to an oxide storage bin; passing said lighter components discharged from said vertical generally cylindrical vessel, and discharged from said classifier, and discharged from said combined scrubber and classifier to a thickener where the remaining solids in the stream are settled to the bottom by continuous non-turbulent agitation and liquid oil and water are removed at the top and separated; passing the solids discharged from said thickener by means of a pump serially through a magnetic separator and a cake filter during which the oxides removed in said magnetic separator are discharged to said oxide storage bin, said cake from said filter is discharged to a filter cake storage, and the filtrate from said filter is discharged to said thickener, whereby waste water slimes are easily handled, iron oxides and oils and lubricants are recovered, solid waste volume is reduced and concentrated, sewer maintenance is reduced, and the final water discharged is of a cleanliness generally acceptable.

3,844,944
APPARATUS AND METHOD FOR EFFECTING SEPARATIONS
Louis Mercuri, 11 Linda St., Newark, Del. 19711
Filed June 27, 1972, Ser. No. 266,596
Int. Cl. E02b *15/04*
U.S. Cl. 210—73 **3 Claims**



1. A process for separating a mixture of liquids without counterflow streams or turbulence which process comprises temporarily storing a mixture of said liquids in a first container having a first chamber and a second chamber, said second chamber being adapted to receive from said first chamber by direct flow therefrom liquid having a different composition than said mixture in said first chamber; allowing said mixture in said second chamber to flow by simple gravity into a second container similar in structure to said first container; and repeating said gravity flows in seriatim through said chambers until only one component of said mixture is being obtained at a given outlet, said flows being in a straight line manner in the absence of counterflow streams or turbulence.

3,844,945
MOVEMENT OF ALUM SLUDGE
Charles P. Ciaffone, Sturbridge, Mass., assignor to CPC Engineering Corporation, Sturbridge, Mass.
Filed Aug. 27, 1973, Ser. No. 391,620
Int. Cl. B01d *21/24*
U.S. Cl. 210—73 **5 Claims**



1. In a sludge movement system from an aqueous system for the collecting of sludge which comprises
a settling tank,
the improvement, comprising,
receiver for sludge in the bottom of said settling tank
conduit means communicating said receiver to a discharge unit
a valve means for closing the conduit therebetween
valve means beyond the discharge unit constituting a means for isolating it,

a duplication of said system in parallel therewith the discharging into a common conduit,

means in said discharge unit to sense a low and a high level of aqueous sludge; therein,

said high level sensing means being responsive to admit compressed air and to open valves permitting pneumatic discharge of sludge from said discharge unit and

at the same time means in the other unit response to low level to close its discharge valve and air valves to isolate it from said pneumatic discharge system.

3,844,946

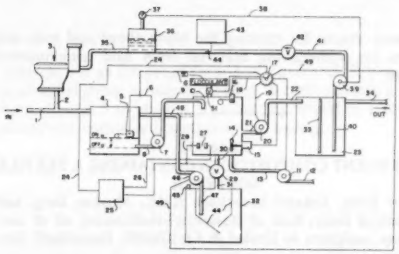
AEROBIC WASTEWATER TREATMENT SYSTEM WITH PARTIAL REUSE AND INFREQUENT DOSING TO SOIL

R. Paul Farrell, Jr., Schenectady, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Continuation of Ser. No. 18,682, March 11, 1970, abandoned. This application Aug. 8, 1973, Ser. No. 339,091

Int. Cl. B01d *21/01*; **C02c** *1/02*

U.S. Cl. 210—104 **14 Claims**



1. A waste disposal treatment system, comprising a treatment and settling tank having an inlet for fluid waste material, a first outlet for a relatively dense sludge, and a second outlet spaced a substantial distance above said first outlet for removing effluent; first flow control means actuable to pass sludge through said first outlet; second flow control means actuable to pass effluent through said second outlet; first sludge level control means for actuating said first flow control means to remove sludge from said tank; second effluent level control means for actuating said second flow control means to remove effluent from said tank; means for selectively admitting oxygen bearing gas into said treatment and settling tank for aerating and agitating the fluid waste contained therein; selectively operable means for admitting a flocculating substance into said treatment and settling tank to facilitate sludge formation; a holding tank with an inlet for directly receiving fluid waste from a source, and having means for discharging the received waste into said treatment and settling tank inlet whenever the waste within said holding tank reaches a predetermined level; a digester receiving sludge passing through said first outlet, and means for selectively returning effluent from said digester to said treatment and settling tank; an effluent storage tank receiving effluent from said treatment and settling tank second outlet; means for providing removal of all effluent from said effluent storage tank above a maximum predetermined level; and means for removing on demand effluent from said effluent storage tank for use in flushing water with the source of waste material, irrigation and other similar purposes.

3,844,947

PRESSURE RESPONSIVE CHECK VALVE

James R. Sypitkowski, Indianapolis, Ind., assignor to The Carborundum Company, Niagara Falls, N.Y.

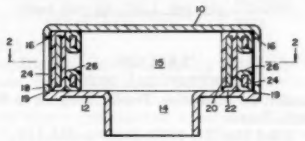
Filed Sept. 27, 1972, Ser. No. 292,561

Int. Cl. B01d *27/10*

U.S. Cl. 210—130 **7 Claims**

1. In a spin-on type disposable cartridge filter, the filter having a housing holding a filter element with an inlet and an outlet for the flow of fluids through the element, and having a pressure-responsive valve means associated with the fluid outlet; the improvement comprising a valve including:

a. A circular cup having a side depending from a base, said side having at least one opening therein, the edges of the side engaging a matching support base to hold the cup; and



b. A resilient strip coiled upon itself within the cup with the edges of the strip positioned in sliding relationship with the inner surfaces of the base of the cup and support base; the outer peripheral surface of the strip being urged against the side of the cup and the strip being movable in response to fluid pressure, said pressure being exerted against the outer surface of the strip through the opening in the side of the cup.

3,844,948

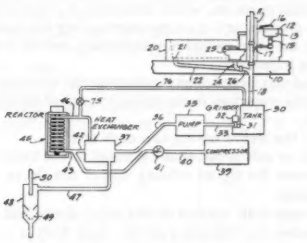
REACTOR FOR CONTINUOUS WET OXIDATION PROCESS

Harry Dennis Burke, and George Boswinkle, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 4, 1972, Ser. No. 312,220

Int. Cl. B01d *33/30*

U.S. Cl. 210—152 **9 Claims**



1. In a continuous process wet oxidation apparatus for home sewage treatment systems, for treating the organic waste sewage from the home by the wet oxidation process, means forming a continuous hydraulic circuit and including in series connection with one another, a tank, a pump, a heat exchanger and a reactor, and means for supplying oxygen under pressure to the sewage as it enters said reactor, said reactor comprising a pressure vessel, having

a coil of tubing having an inlet at one end thereof for receiving in combination raw waste and oxygen passing from the heat exchanger and the means for supplying oxygen and having an outlet at its opposite end through which hot, oxidized effluent is discharged from said vessel and said coil of tubing being of sufficient length relative to its cross-section to provide coil residence time of the material passing therethrough sufficient to complete oxidation of substantially all organic solids pumped through said coil at a preselected rate,

a housing for said reactor including a heat insulating sheath extending from said coil,

and a source of heat in said reactor extending along said coil in intimate relation therewith to maintain a constant temperature along said coil and supply the heat to said coil to completely oxidize the waste as passing from said inlet to said outlet.

3,844,949

CENTRIFUGAL DRIER

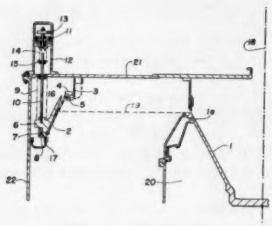
Andre Mercier, La Madeleine, France, assignor to Fives Lille Cail, Paris, France

Filed May 21, 1973, Ser. No. 362,320

Claims priority, application France, May 19, 1972, 72.018006

Int. Cl. B01d *21/26*

U.S. Cl. 210—378 **8 Claims**



1. In a centrifugal drier for the continuous production of dried solid particles, which comprises a rotary drying basket having an axis, and a casing surrounding the basket and receiving the solid particles centrifugally ejected from the basket in a trajectory:

1. a tubular sleeve of an elastic material mounted in the path of the trajectory in the casing to receive the ejected particles,
   (a) the sleeve having two ends and
   (b) an axis substantially parallel to the basket axis,
2. means for rigidly affixing one of the sleeve ends to the casing,
3. a rigid body carried by the other sleeve end, and
4. means for imparting to the rigid body a reciprocating motion substantially parallel to the axes whereby the elastic sleeve is alternately elongated and contracted.

3,844,950

ROTARY SKIMMER

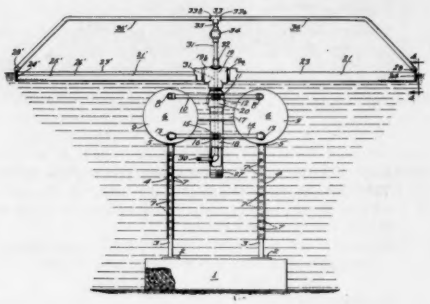
Gerard D. Aulisa, Claymont, Del., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Feb. 20, 1973, Ser. No. 333,831

Int. Cl. E02b *15/04*

U.S. Cl. 210—170 **3 Claims**

1. A device for removing floatable material from the surface of a body of water comprising means establishing a substantially vertical axis, an elongated skimming blade penetrating the surface of the water and supported for rotation about said axis in a predetermined direction, an accumulation means secured to the trailing edge of said blade and rotating therewith, buoyant means supporting the blade and accumulation means and also said axis in the water with the blade at a predetermined depth below the water surface, means for anchoring said buoyant means at a fixed location in said body



of water, means for rotating the blade about said axis, and means for withdrawing material from said accumulation means.

3,844,951

DETERGENT COMPOSITIONS CONTAINING A TEXTILE SOFTENER

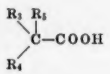
Walter Fries, Erkrath-Unterbach Rhld.; Markus Berg, and Manfred Dohr, both of Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Division of Ser. No. 2,722, Jan. 14, 1970, Pat. No. 3,676,338, which is a continuation-in-part of Ser. No. 745,952, July 18, 1968, abandoned. This application May 1, 1972, Ser. No. 249,217

Int. Cl. C11d *1/04, 1/83;* D06m *13/20*

U.S. Cl. 252—8.6 **14 Claims**

1. Washing agents and washing agent adjuvants in granular or pasty form utilizable in neutral to alkaline textile washing baths which consists essentially of (I) from 5 to 80 percent by weight of a combination of surface-active compounds consisting of (a) from 20 to 90 percent by weight of said combination of customary surface-active compounds utilizable in neutral to alkaline washing baths consisting of a mixture of (i) at least 50 percent by weight of the mixture of anionic surface-active compounds selected from the group consisting of surface-active sulfonates, surface-active sulfates and straight-chain fatty acid soaps, and (ii) non-ionic surface-active compounds, and (b) from 80 to 10 percent by weight of said combination of a textile softener selected from the group consisting of (1) mixtures of compounds of the formula



wherein R_3, R_4 and R_5 are members selected from the group consisting of alkyl having one to 23 carbon atoms and cycloalkylalkyl having from seven to 23 carbon atoms, with the proviso that the total number of carbon atoms in R_3, R_4 and R_5 is from six to 24 carbon atoms, as produced by addition of carbon monoxide and water to olefins by the Koch process, and (2) water-soluble salts thereof, and (II) from 20 to 95 percent by weight of a builder selected from the group consisting of neutral to alkaline reacting inorganic and organic builders.

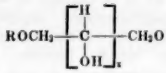
3,844,952

DETERGENT COMPOSITIONS

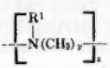
Gary Edwin Booth, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 3, 1972, Ser. No. 249,815
Int. Cl. D06m 13/16, 13/18; C11d 1/00
U.S. Cl. 252—8.75 17 Claims

1. A detergent composition consisting essentially of: (1) from about 5 to about 30 percent by weight of a water-soluble organic detergent compound; (2) from about 25 to about 75 percent by weight of a water-soluble detergency builder; (3) from about 2 to about 15 percent by weight of an α,ω-disubstituted derivative of a non-cyclic, hygroscopic polyol, said derivative having the formula



wherein x is an integer of from 3 to 7 and each R is an alkyl or alkanoyl group containing at least 16 carbon atoms; and (4) from about 0.5 to about 1.5 percent by weight of a polyalkyleneimine compound containing the moiety



wherein y is an integer from 1 to 4, z is an integer greater than 1, and R^1 is selected from the group consisting of hydrogen and alkyl and alkanoyl substituents containing from about 1 to about 22 carbon atoms, said polyalkyleneimine having from about 5 to about 100 percent of the nitrogen atoms substituted with said alkyl or alkanoyl substituents, the polyalkyleneimine having a molecular weight of from about 200 to 1 million, and being water-soluble or water-dispersible.

3,844,953

SOLID FILM LUBRICANT WITH POLYAMIDE BINDER

Mahlon E. Campbell, Overland Park, Kans., and William D. Walker, Kansas City, Mo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Apr. 19, 1971, Ser. No. 135,429
Int. Cl. C10m 7/34
U.S. Cl. 252—12 12 Claims

1. A solid film lubricant adhered to a bearing surface, said lubricant comprising a layer of a polymeric composition having a finely divided, inorganic, solid phase lubricating material dispersed throughout said composition, said composition being characterized by the property of having been derived from the reaction of an aromatic tetraamine with an ester derivative of an aromatic tetracarboxylic acid dianhydride, said lubricant being coated on said surface with said composition in a soluble state and then cured thereon by advancing said composition to a degree of polymerization no greater than that achieved by heat curing the composition at temperatures of approximately 200° to 300° F. for not more than about two hours, the ratio by weight of said lubricating material to said composition being from about 2:1 to about 10:1.

3,844,954

ANTIFRICTION MATERIAL

Andrei Nikiforovich Filippov, Vspolny pereulok, 10, kv. 41; Leonid Rafailovich Gorelov, Leningradsky prospekt, 75-a, kv. 75; Alexei Georgievich Festa, Sarinsky proezd, 22, kv. 79; Alexandr Vasilievich Ostapchuk, Dmitrovskoe shosse, 183, kv. 149, and Konstantin Antonovich Myshko, Novomikhalkovsky proezd, 11, kv. 41, all of Moscow, U.S.S.R.

Filed July 28, 1972, Ser. No. 275,960
Int. Cl. C10m 7/30, 7/26, 7/20
U.S. Cl. 252—12 2 Claims

1. An antifriction material consisting essentially of 5–20 wt. percent lead, 0.3–3 wt. percent zinc stearate powder, 1–5 wt. percent French chalk, 72–93.7 wt. percent graphite and binder, said binder composed of a major amount of phenol-formaldehyde resin and minor effective amounts of hexamethylene-tetramine, stearine, and calcium hydroxide, wherein the binder comprises from about 21.1–26 wt. percent of the mixture of graphite and binder.

3,844,955

EXTREME PRESSURE GREASE WITH IMPROVED WEAR CHARACTERISTICS

William B. Green, Nederland, Tex.J, assignor to Texaco Inc., New York, N.Y.

Filed May 29, 1973, Ser. No. 364,792
Int. Cl. C10m 5/22, 5/02, 7/06
U.S. Cl. 252—21 4 Claims

1. A grease lubricating composition comprising a lubricating oil vehicle, a thickener therefor, and an extreme pressure and wear reducing amount of a combination of molybdenum disulfide and calcium hydroxide wherein the weight ratio of molybdenum disulfide to calcium hydroxide is from about 0.5 to about 10.

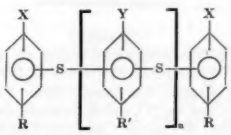
3,844,956

LUBRICANTS CONTAINING AMINO AND HYDROXY-SUBSTITUTED POLYPHENYLTHIOETHERS

John C. Nnadi, Glassboro, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,936
Int. Cl. C10m 1/42
U.S. Cl. 252—47.5 13 Claims

1. A lubricating oil or grease composition comprising a major proportion of said lubricating oil or grease and an antioxidant or dispersant amount of a compound of the formula



wherein R and R′ are hydrogen or hydrocarbyl containing from 1 to 100 carbon atoms, X and Y are selected from the group consisting of amino and hydroxy, such that said X and Y are never all amino or all hydroxy, and n is from zero to 10, or mixtures of such compounds.

3,844,957

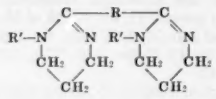
LUBRICANT AND FUEL COMPOSITIONS

Franklin H. Robinson, North Brunswick; Marvin S. Rakow, East Brunswick, and Paul M. Kerschner, Trenton, all of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed July 30, 1971, Ser. No. 167,808
Int. Cl. C10m 3/40, 1/46
U.S. Cl. 252—32.5 3 Claims

1. A normally liquid petroleum hydrocarbon composition comprising a major proportion of a normally liquid petroleum

hydrocarbon selected from the group consisting of gasoline, diesel fuel, jet fuel, burner fuel, and lubricating oil and about 1 to 250 pounds per thousand barrels of a hydrocarbyl acid orthophosphate salt of a ditetrahydropyrimidine having the formula



wherein the hydrocarbyl portions of said hydrocarbyl acid orthophosphate each contains from 1 to about 15 carbons, R is a hydrocarbylene group of about 2 to 34 carbons, R′ is a hydrocarbyl group of about 6 to 30 carbons, and at least about 25 percent of the basic nitrogens of the ditetrahydropyrimidine are converted to the hydrocarbyl acid orthophosphate salt.

3,844,958
HYDROCARBYL AMINES FOR LUBRICATING OIL DETERGENTS

Robert G. Anderson, and Lewis R. Honnen, both of Novato, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. Nos. 488,775, Sept. 20, 1965, Pat. No. 3,574,576, and Ser. No. 481,916, Aug. 23, 1965, abandoned, and Ser. No. 408,686, Nov. 3, 1964, abandoned. This application June 21, 1967, Ser. No. 647,632

Int. Cl. C10m *1/48, 1/20, 1/32*

U.S. Cl. 252—32.7 E **13 Claims**

1. A composition of the formula:

$$R^1NA^1Z^1$$

wherein R^1 is a branched chain hydrocarbon radical substantially free of unsaturation of from about 425 to about 3,000 molecular weight,

A^1 is hydrogen or hydrocarbyl of from 1 to 10 carbon atoms,

Z^1 is hydrogen, or hydrocarbyl of from one to 10 carbon atoms, and may be taken together with A^1 to form a ring with the nitrogen to which A^1 and Z^1 are attached consisting of from 5 to 6 annular members having from 0 to 1 oxygen annular member, 1 nitrogen annular member and 4 to 5 carbon annular members.

3,844,959
DETERGENT COMPOSITION WITH AN AMIDO-AMINE FABRIC SOFTENING AGENT

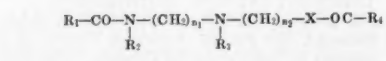
Francis Jean Cracco, Cincinnati, Ohio; Pier-Luigi Pacini, Rome, Italy, and Ian O'Connell, Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 16, 1972, Ser. No. 298,144

Int. Cl. D06m *9/00*

U.S. Cl. 252—8.75 **7 Claims**

1. A detergent composition with softening characteristics consisting essentially of an anionic surface-active agent; and from about 2 percent to about 40 percent by weight of a fabric softening compound of the formula



wherein R_1 and R_4 are each alkyl from 11 to 21 carbon atoms; R_2 and R_3 are each hydrogen or alkyl of from one to four carbon atoms; X is oxygen or $—NR_5—$, where R_5 is hydrogen or alkyl of from one to four carbon atoms; and n_1 and n_2 are each integers of from 2 to 6; wherein the weight ratio of said anionic surface-active agent to said fabric softening compound is in the range of from 8:1 to 1:4.

3,844,960
LUBRICANT COMPOSITIONS

Walter V. Breitigam, Wood River, and Bennett M. Henderson, Edwardsville, both of Ill., assignors to Shell Oil Company, New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,593

Int. Cl. C10m *1/48, 1/36*

U.S. Cl. 252—32.7 E **2 Claims**

1. An ashless lubricant composition comprising a major amount of a mineral lubricating oil which is a neutral hydrocarbon oil with a viscosity index of at least 70 and

A. from about 0.05 to 10 percent by weight of a reaction product of polyisobutenyl succinimide of tetraethylenepentamine wherein the succinimide has an average molecular weight between 400–3,000 and di-2-ethylhexyldithiophosphoric acid, said reaction being carried out by heating an equivalent weight of each reactant at a temperature of about 80°–120°C and utilizing said product without further purification and

B. from about 0.001 to 2 percent by weight of tetra-2-ethylhexyltrithiopyrophosphate.

3,844,961
POLYPHENYL THIOETHER LUBRICATING COMPOSITIONS

Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 102,969, Dec. 30, 1970, Pat. No. 3,748,269. This application Feb. 5, 1973, Ser. No. 329,796

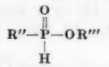
Int. Cl. C10m *1/48, 1/24*

U.S. Cl. 252—46.7 **2 Claims**

1. A lubricant composition consisting essentially of a major amount of a polyphenyl thioether having the formula

$$R—Y(R′—Y)_n—R$$

wherein R is a phenyl group or a substituted phenyl group, R′ is a phenylene group or substituted phenylene group, in which the substituents on said phenyl and phenylene groups are halogen, alkyl or alkoxy containing from one to four carbon atoms, n is an integer of from 1 to 6, Y is sulfur or oxygen provided that at least one of the groups represented by Y is sulfur, and mixtures of such thioethers and from about 0.05 to about 1.0 percent by weight of an organic phosphinic acid of the formula



wherein R″ is an aryl group of from six to 16 carbon atoms, a halogen substituted aryl group of from six to 16 carbon atoms, an alkyl substituted aryl group containing from six to 16 carbon atoms or an alkyl group containing one to 12 carbon atoms, R‴ is hydrogen or an R″ group and from 0.01 to 0.5 percent by weight of aryl substituted fatty acids of the formula

$$Ar—C_aH_{2a}—COOH$$

wherein Ar is an aryl group containing from six to 16 carbon atoms and a is an integer of from 8 to 24.

3,844,962
POLYPHENYL TRIOETHER LUBRICATING COMPOSITIONS

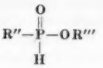
Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 102,969, Dec. 30, 1970, Pat. No. 3,748,269. This application Feb. 6, 1973, Ser. No. 330,139
Int. Cl. C10m 1/48
U.S. Cl. 252—46.7 **2 Claims**

1. A lubricant composition consisting essentially of a major amount of a polyphenyl thioether having the formula

$$R-Y(R'-Y)_n-R$$

wherein R is a phenyl group or a substituted phenyl group, R′ is a phenylene group or substituted phenylene group, in which the substituents on said phenyl and phenylene groups are halogen, alkyl or alkoxy containing from one to four carbon atoms, *n* is an integer of from 1 to 6, Y is sulfur or oxygen provided that at least one of the groups represented by Y is sulfur, and mixtures of such thioethers and from about 0.05 to about 1.0 percent by weight of an organic phosphinic acid of the formula



wherein R″ is an aryl group of from six to 16 carbon atoms, a halogen substituted aryl group of from six to 16 carbon atoms, an alkyl substituted aryl group containing from six to 16 carbon atoms or an alkyl group containing one to 12 carbon atoms, R‴ is hydrogen or an R″ group and from 0.01 to 0.5 percent by weight of acetylenic dibasic acids having the formula

$$HOOC-C_bH_{2b}-C \quad C-C_cH_{2c}-COOH$$

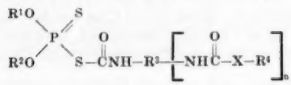
where *b* and *c* are integers of from 0 to 10 inclusive.

3,844,963
LUBRICANTS

John Scotchford Elliott; Gerald John Joseph Jayne, and Patrick Robert James Folliard, all of London, England, assignors to Edwin Cooper & Company Limited, London, England

Filed July 5, 1972, Ser. No. 269,205
Claims priority, application Great Britain, July 6, 1971, 31634/71
Int. Cl. C10m 1/48
U.S. Cl. 252—46.7 **8 Claims**

1. A lubricant composition consisting essentially of lubricating oil having dissolved therein from about 0.1 to 10% by weight of at least one oil-soluble dithiophosphoric acid derivative having the general formula:



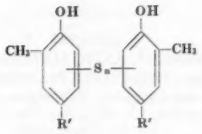
wherein R^3 is selected from the group consisting of mono-valent aliphatic groups, mono-valent aromatic groups, di-valent aliphatic groups and di-valent aromatic groups; *X* is selected from the group consisting of oxygen atoms and sulphur atoms; R^4 is an alkyl group; R^1 and R^2 are the same or different and are selected from the group consisting of alkyl groups, alkaryl groups, aryl groups, aralkyl groups and alkenyl groups; and *n* is 0 when R^3 is a mono-valent group and *n* is 1 when R^3 is a divalent group.

3,844,964
EXTREME PRESSURE LUBRICATING OIL ADDITIVE

Brian R. Kennedy, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 20, 1972, Ser. No. 308,227
Int. Cl. C10m 1/42
U.S. Cl. 252—48.2 **2 Claims**

1. A lubricating composition comprising a major amount of an oil of lubricating viscosity and from 0.5 to 20 weight percent of at least one compound of the formula:



wherein R′ is an alkyl group of from 10 to 20 carbon atoms and n is an integer of from 1 to 4.

3,844,965
LUBRICATING OIL ADDITIVES

Stuart H. Brown, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 5, 1972, Ser. No. 295,416
Int. Cl. C10m 1/32
U.S. Cl. 252—51.5 A **12 Claims**

1. A lubricating composition comprising a major amount of an oil of lubricating viscosity and from 0.01 to 5 percent by weight of the oil-soluble reaction product produced by contacting a nitrogenous dispersant containing at least one primary or secondary amino nitrogen atom, which is a hydrocarbyl-substituted hydrocarbyl monoamine, polyamine or succinimide wherein said hydrocarbyl substituent is from about C_{30} to about C_{200}, a C_3–C_{20} hydrocarbyl polyisocyanate, and a polyoxyalkylene polyol of at least about 1,000 molecular weight in the range of mol ratios of nitrogenous dispersant to polyisocyanate to polyol of about 0.5–5:0.75–6:1, neat or in an inert solvent, at a temperature from room temperature to the temperature of solvent reflux.

3,844,966
ELECTROSTATIC LIQUID DEVELOPER COMPOSITION

George R. Nelson, Ashburnham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 778,006, Nov. 18, 1968, abandoned, which is a continuation of Ser. No. 575,970, Aug. 30, 1966, abandoned, which is a continuation-in-part of Ser. No. 343,130, Feb. 6, 1964, abandoned. This application May 10, 1972, Ser. No. 252,136
Int. Cl. G03g 9/04
U.S. Cl. 252—62.1 **4 Claims**

1. A liquid developer composition for developing a latent electrostatic image consisting essentially of positively charged, finely divided toner particles comprising carbon black suspended in an insulating liquid selected from the group consisting of benzene, toluene, xylene, cyclohexane, and paraffin hydrocarbons and a mixture of (1) a metal cation salt selected from the group consisting of trivalent and tetravalent salts of aluminum, iron, thorium, zirconium, lanthanum, germanium, tin, vanadium, thallium, and an organic acid selected from the group consisting of octoic, stearic, rosin, polymerized rosin, naphthenic, N-tallow B-imino dipropionic and succinic acids and (2) an organic amine, said amine selected from the group of N-cocomorpholine, an imidazole of the formula $CH_3(CH_2)_nC_3H_4N_2C_2H_4OH$ wherein *n* is a positive

integer; tertiary dimethyl soya amine; tallow amine dioleate; n-lauryl propylene diamine; and a copolymer of lauryl methacrylate and diethylaminoethylmethacrylate; said salt and amine being chemically non-reactive in the developer and being dissolved in said insulating liquid at printing temperature, said insulating liquid solution of (1) and (2) having a volume resistivity of at least about 10^9 ohm centimeters and dielectric constant less than about 3.5, said salt and amine being present in the amount effective to provide improved image density and definition in developed electrostatic images, said insulating liquid being present in major amounts sufficient to provide a free flowing liquid developer composition.

3,844,967

FERROELASTIC MATERIALS

Lothar H. Brixner, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1972, Ser. No. 301,538
Int. Cl. C04b 35/00
U.S. Cl. 252—62.9 4 Claims

1. A composition having the formula

$$Pb_{3-x}Sr_x(PO_4)_2,$$

wherein x is from 0.01 to 0.8.

3,844,968

NEW IMPREGNATION MIXTURES FOR ELECTRICAL INSULATING MIXTURES

Pierre Jay, Saint Didier au Mont d'Or, France, assignor to Rhone-Progil, Paris, France

Filed Feb. 3, 1972, Ser. No. 223,319
Claims priority, application France, Feb. 5, 1971, 71.04692
Int. Cl. H01b 3/24
U.S. Cl. 252—66 7 Claims

1. A liquid composition for the impregnation of electrical insulating materials consisting essentially of a mixture of 25 – 33 parts by weight of monochlorodiphenyl, 28 – 36 parts by weight of dichlorodiphenyl consisting of at least 50 percent of the 2,4′ isomer, and 37 – 43 parts by weight of trichlorodiphenyl.

3,844,969

PRODUCTION OF DETERGENT COMPOSITIONS

Joseph John Griffiths, and Raymond John Wilde, both of Wirral, England, assignors to Lever Brothers Compnay, New York, N.Y.

Filed July 6, 1971, Ser. No. 160,157
Claims priority, application Great Britain, July 10, 1970, 33718/70
Int. Cl. C11d 1/14, 11/02
U.S. Cl. 252—108 2 Claims

1. A process for the preparation of a detergent powder having an organic content of from 50–80 percent, said organic content consisting essentially of a synthetic anionic, nonionic, zwitterionic or amphoteric detergent active compound which is present in an amount of from about 10–50 percent by weight of the total composition, an organic detergency builder which is present in an amount of from about 27 to about 50 percent by weight of the total composition, said builder being selected from the group consisting of α-sulphonated fatty acids, higher alkane disulfonates and sulfinate-sulfonates, soaps, sodium polyacrylate, sodium polymaleate and sodium copolyethylene maleate, oxidised polysaccharides, sodium oxydiacetate, sodium carboxymethyloxysuccinate, sodium nitrilotriacetate, the water soluble salts of dicarboxylic acids of the formula $R.CH(COOH)(CH_2)_n.COOH$ when n is 0 or 1 and R is a primary or secondary straight chain alkyl or alkenyl group containing from 10 to 20 carbon atoms and mixtures thereof, which process comprises forming an aqueous slurry of detergent ingredients containing from about 20 to about 40 percent by weight of the slurry of water in a pressurised vessel at a temperature of from about 125°C to 180°C, and subsequently spray-drying the slurry in a stream of gas at a temperature of from about 100°C to about 250°C.

3,844,970

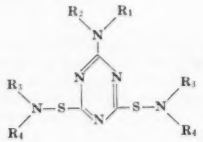
PROCESS FOR THE VULCANISATION OF NATURAL AND/OR SYNTHETIC RUBBERS MADE FROM HALOGEN-FREE DIENES

Theo Kempermann; Ulrich Eholzer, both of Cologne; Hermann Westlinning, Kleinostheim, and Horst Fleischhauer, Grossauheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt/Main, both of, Germany

Filed Apr. 24, 1972, Ser. No. 246,646
Claims priority, application Germany, Apr. 26, 1971, 2120288
Int. Cl. C08f 45/48; C08g 51/48
U.S. Cl. 252—182 8 Claims

1. A vulcanization accelerator composition comprising

a. 0.05 to about 3 parts by weight of at least one 2,4,6-triazine of the formula



wherein R_1 and R_2, which may be the same or different, are hydrogen, alkyl having one to six carbon atoms or phenyl, or R_1 and R_2, taken together, complete with the nitrogen atom to which they are attached, a 5- or 7-membered ring which may contain oxygen as a hetero atom and R_3 and R_4, which may be the same or different, are each alkyl having one to six carbon atoms or one is alkyl having one to six carbon atoms and the other is hydrogen or R_3 and R_4, taken together, complete with the nitrogen atom to which they are attached, a 5- to 7-membered ring which may contain oxygen as a hetero atom and

b. 0.1 to about 4 parts by weight of at least one thiazole accelerator.

3,844,971

PROCESS FOR THE MANUFACTURE OF CONDENSATION PRODUCTS SUITABLE AS HARDENERS FOR EPOXIDE RESINS

Hussain El-Ghatta; Heinz Lussi; Clau Berther, and Manfred Hoppe, all of Chur/Gr, Switzerland, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland

Filed May 15, 1972, Ser. No. 253,285
Claims priority, application Switzerland, May 14, 1971, 7182/71
Int. Cl. C08g 51/84
U.S. Cl. 252—182 8 Claims

1. A process for the manufacture of condensation products suitable as hardeners for epoxide resins, which comprises condensing

a. byproducts obtained in the oxidation of a cycloalkane with oxygen or an oxygen-containing gas, said byproducts comprising hydrocarbons containing carboxylic acid groups, and being capable of reacting with primary and

secondary amines and which can form water soluble alkali metal salts, with

b. amines having the structure

$$H\text{+}HN\text{—}A\text{+}_nNH_2$$

in which n is 2–6, and A is a lower alkyl radical having two or more carbon atoms, each A radical being linked by different carbon atoms to adjacent members, the A radicals being the same or different, or with

c. neopentyltetramine;

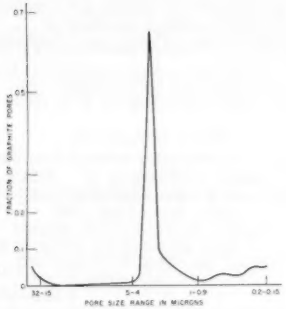
the amine being present in a ratio such that at least two amino groups of the amine correspond to one equivalent of the titratratable acid group of the byproducts.

3,844,972

METHOD FOR IMPREGNATION OF GRAPHITE

Geoffrey R. Tully, Jr., Alamo, and Leslie D. Christensen, Livermore, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 24, 1958, Ser. No. 769,521
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R **7 Claims**



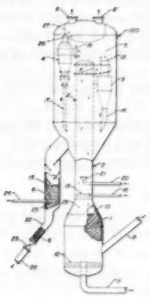
1. A process for impregnating porous graphite with uranyl nitrate dihydrate dissolved in tertiary butyl alcohol and thereafter removing said solvent, comprising the steps of subjecting said graphite to a vacuum to degas same, enveloping said graphite piece with said solution and pressurizing an air-space thereover limited in volume preferably to a space about one-fifth the total volume of the graphite piece to force said solution into said graphite and thereafter evacuating said air-space to a pressure approaching, but not lower than, −19 in. Hg, said evacuated space being thereafter closed to the evacuation means for a period of time of the order of at least 30 minutes for maximum penetration in the overpressure step, repeating said evacuation and pressurization steps until said graphite piece is impregnated to a desired depth, removing said piece from said solution, freezing said impregnated solution, subjecting said graphite piece containing said frozen solution to a vacuum, contacting said graphite piece with an overpressure of non-reactive gas heated to a temperature in the range of from 40° to 55° C for a period of time not longer than 2 minutes, evacuating said gas and sublimed solvent from said graphite, and alternately repeating said latter pressure and vacuum steps until all of said solvent has been removed.

3,844,973

FLUIDIZED CATALYST REGENERATION BY OXIDATION IN A DENSE PHASE BED AND A DILUTE PHASE TRANSPORT RISER

Laurence O. Stine, Western Springs, and Algie J. Conner, Downers Grove, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed May 30, 1972, Ser. No. 258,041
Int. Cl. B01j *11/70, 11/68*
U.S. Cl. 252—417 **3 Claims**



1. A process for the regeneration of a zeolite-containing or amorphous coke-contaminated spent hydrocarbon cracking catalyst, removed from a reaction zone, and the conversion of carbon monoxide, resulting from the oxidation of coke from said catalyst, to carbon dioxide, which process is operated within a pressure range from about normal atmospheric pressure to about **50** p.s.i.g. and comprises the steps of:

a. passing said catalyst and a fresh free oxygen-containing regeneration gas to a first dense bed of fluidized particulate catalyst in a regeneration zone and oxidizing coke in said first dense bed maintained at oxidizing conditions by employing a temperature within the range of about 1,250°F. to about 1,400°F., a superficial gas velocity within the range of about 3 to about 10 feet per second, and a catalyst residence time of less than two minutes, to produce partially regenerated catalyst and partially spent regeneration gas containing CO;

b. passing said partially regenerated catalyst and partially spent regeneration gas to a dilute phase transport riser communicating with and superimposed over said first dense bed and therein controlling conversion conditions including controlling the temperature within the range of about 1,275°F. to 1,425°F. and the superficial gas velocity within the range of about 10 to 25 feet per second to convert CO to CO_2, to produce spent regeneration gas;

c. separating the thus-regenerated catalyst from said regeneration gas; and,

d. introducing said regenerated catalyst to a second dense bed of particulate material, from which said regenerated catalyst is returned to said reaction zone.

3,844,974

CATALYST FOR THE POLYMERIZATION OF CONJUGATED DIOLEFINS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 53,294, July 8, 1970, Pat. No. 3,734,900. This application Jan. 26, 1973, Ser. No. 326,940
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 B **2 Claims**

1. A catalyst composition consisting essentially of

A. at least one organometal selected from the group consisting of

1. an organoaluminum compound of the formula:
$$AlR_1R_2R_3$$
wherein R_1 is selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, aryalkyl, hydrogen and fluorine, R_2 and R_3 being selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, alkoxy and aryalkyl,
2. an organomagnesium compound of the formulae:
   a. R_nMgX_b
   b. R_2Mg or
   c. RMgY
wherein R is selected from the group consisting of alkyl, aryl, arylalkyl and alkaryl and X is a halogen, Y is fluorine and a and b are mole fractions whose sum equals 2 while the mole ratio of a/b is greater than 2 but not infinite,
3. an organozinc compound of the formula:
$$R_2Zn$$
wherein R is selected from the group consisting of alkyl, aryl, alkaryl and arylalkyl, and
4. an organolithium compound of the formulae:
   a. RLi or
   b. R'_4LiAl
wherein R is selected from the group consisting of alkyl, alkaryl, arylalkyl and aryl and R′ is selected from the group consisting of alkyl, alkaryl and arylalkyl,

B. at least one nickel compound selected from the group consisting of
nickel benzoate, nickel acetate, nickel naphthenate, bis(alpha furyl dioxime) nickel, nickel octanoate, nickel palmitate, nickel stearate, nickel acetylacetonate, bis(salicylaldehyde) ethylene diimine nickel, nickel salicaldehyde and nickel tetracarbonyl,

C. a fluorine containing compound selected from the group consisting of
boron trifluoride, boron trifluoride diethyl-etherate, boron trifluoride di-n-butyl-etherate, boron trifluoride ethyl acetate complex, boron trifluoride benzaldehyde complex, boron trifluoride acetone complex, boron trifluoride benzonitrile complex, boron trifluoride ethyl alcoholate, boron trifluoride phenolate, tributyltin fluoride, molybdenum hexafluoride, tungsten hexafluoride, stannic fluoride, titanium tetrafluoride, antimony trifluoride, and

D. a compound containing a hydroperoxide group of the formulae:
   a. ROOH or
   b. HOOR′OOH
wherein R is hydrogen or hydrocarbyl and R′ is hydrocarbylene in which the mole ratio of the organometal compound to the nickel compound ranges from about 1/1 to about 150/1, the mole ratio of the fluorine containing compound to the nickel containing compound ranges from about 3/1 to about 400/1, the mole ratio of the organometal compound to the fluorine containing compound ranges from about 0.3/1 to about 3/1 and the mole ratio of the hydroperoxide compound to the organometal compound ranges from about 0.0/1 to about 1.5/1.

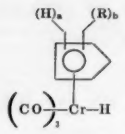
3,844,975

THERMALLY AGED HYDRIDE BASED POLYMERIZATION CATALYST

Frederick J. Karol, Somerset, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 10, 1972, Ser. No. 305,270
Int. Cl. C08f 3/04
U.S. Cl. 252—430 **8 Claims**

1. An olefin polymerization catalyst which is prepared by depositing catalytically effective quantities of at least one chromium compound having the structure



wherein R is a C_1 to C_8, inclusive, hydrocarbon radical, *a* is an integer of 0 to 5, inclusive, *b* is an integer of 0 to 5, inclusive, with the proviso that $a + b = 5$,
on an activated inorganic oxide support selected from the group consisting of silica, alumina and mixtures thereof, and
heating the deposited chromium compound at a temperature of about 110° to 900°C. in an inert atmosphere for a period of time sufficient to allow for the removal of at least some of the ligands from said chromium compound.

3,844,976

NOVEL CATALYST SYSTEM

John J. Ventura, Eastontown, and Philip H. Ravenscroft, Edison, both of N.J., assignors to M & T Chemicals Inc., New York, N.Y.

Division of Ser. No. 833,805, June 16, 1969,. This application Oct. 15, 1970, Ser. No. 81,139
Int. Cl. C08f 21/04; C08g 17/013, 17/015
U.S. Cl. 252—431 C **20 Claims**

1. A novel catalyst composition for use as a polymerization catalyst in the production of polyethylene terephthalate, said catalyst composition consisting essentially of
a. an antimony compound having one of the following formulae:
$$Sb(Y)_n \text{ or } Y_3Sb = O; \text{ and}$$
b. an arsenic compound having one of the following formulae:
$$As(Y)_n \text{ or } Y_3As = O,$$
wherein each Y is individually selected from the group of monovalent radicals consisting of R, —OOCR, halogen, —OR, —SR, ——OOCRSH, —SRCOOR′ and

wherein R and R′ are independently selected from the group consisting of alkyl, alkenyl, cycloalkyl, aralkyl, aryl, and alkaryl radicals and *n* represents the integer 3 or 5, wherein said antimony compound is other than an antimony trihalide and with the proviso that the ratio of arsenic compound to antimony compound is between 0.01:1 and 1:1, respectively.

3,844,977

ALUMINOSILICATE COMPOSITIONS, METHOD OF PREPARATION

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 15, 1972, Ser. No. 306,860
Int. Cl. B01j 11/82, 11/40
U.S. Cl. 252—438 **13 Claims**

1. The method of forming an intimate mixture of a particulate crystalline, zeolitic aluminosilicate and an amorphous refractory oxide including the steps of mixing said aluminosilicate with said refractory oxide in the presence of water and a deflocculating amount of a water soluble oxygen-containing

amine having 1 to about 4 oxygen atoms, 1 to about 3 amino groups, and 2 to about 12 carbon atoms per molecule.

3,844,978

LAYERED CLAY MINERALS AND PROCESSES FOR USING

Donald A. Hickson, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 1, 1972, Ser. No. 311,080
Int. Cl. B01j *11/40*; C01b *33/20*
U.S. Cl. 252—455 R **11 Claims**

1. A layer-type, dioctahedral, clay-like mineral having the empirical formula

$$MgO : sSiO_2 : aAl_2O_3 : bAB : xH_2O$$

wherein the layer-lattice structure is composed of said silica, said alumina, said magnesia, said A and said B, and wherein *s* is from 1.4 to 100,

a is from 0.1 to 100,

b is from 0.2 to 0.6,

A is one equivalent of an exchangeable cation having a valence of 3 or less and is external to the layers of the framework or at the edges or between successive layers of the structure,

B is chosen from the group of negative ions consisting of F^-, OH^-, $\frac{1}{2}O^{--}$ and mixtures thereof, and is internal or at the edges and surfaces of the layers of the framework structure, and

x is from 2 to 3.5 at 50% relative humidity,

said mineral being characterized by a d_{001} spacing at said humidity within the range which extends from a lower limit of about 10 Angstroms to an upper limit of about 15 Angstroms when A is monovalent and an upper limit of 18 Angstroms when A is divalent or trivalent, with intermediate values possible when A is a mixture of monovalent, divalent and trivalent cations, and a d_{06} spacing at said humidity in the range of from 1.5176 to 1.4977 Angstroms by x-ray diffraction analysis.

3,844,979

LAYERED CLAY MINERALS, CATALYSTS, AND PROCESSES FOR USING

Donald A. Hickson, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 1, 1972, Ser. No. 311,081
Int. Cl. B01j *11/40*; C01b *33/20*
U.S. Cl. 252—455 R **11 Claims**

1. A layer-type, trioctahedral, clay-like mineral having the empirical formula

$$MgO : sSiO_2 : aAl_2O_3 : bAB : xH_2O$$

wherein the layer-lattice structure is composed of said silica, said alumina, said magnesia, said A and B, and wherein

s is from 0.55 to 1.33,

a is $0 < a \leq 0.333$,

b is $0 < b \leq 0.333$,

A is one equivalent of an exchangeable cation having a valence of 3 or less and is external to the layers of the framework or at the edges or between successive layers of the structure,

B is chosen from the group of negative ions consisting of F^-, OH^-, $\frac{1}{2}O^{--}$ and mixtures thereof, and is internal or at the edges and surfaces of the layers of the framework structure, and

x is from 2 to 3.5 at 50% relative humidity,

said mineral being characterized by a d_{001} spacing at said humidity within the range which extends from a lower limit of about 10 Angstroms to an upper limit of about 15 Angstroms when A is monovalent and an upper limit of 18 Angstroms when A is divalent or trivalent, with intermediate values possible when A is a mixture of monovalent, divalent and trivalent cations, and a d_{06} spacing at said humidity in the range of from 1.5335 to 1.5176 Angstroms by x-ray diffraction analysis.

3,844,980

CATALYST FOR USE IN PURIFICATION OF EXHAUST GASES

Toshiyuki Sakai, Funabashi, and Yutaka Ushimaru, Tokyo, both of Japan, assignors to Mitsui Mining & Smelting Co. Ltd., Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 320,330
Claims priority, application Japan, Dec. 28, 1971, 47-2226
Int. Cl. B01j *11/08*
U.S. Cl. 252—466 B **2 Claims**

1. A catalyst for use in purifying exhaust gases from combustion operations, comprising (A) a mixture of metal oxide particles consisting of (1) 5 to 10 parts by weight of Mn_2O_3, (2) 10 to 20 parts by weight of CuO and/or Cu_2O in CuO equivalent, (3) 5 to 10 parts by weight of Fe_2O_3, (4) 60 to 80 parts by weight of γ-Al_2O_3 and (5) 1 to 5 parts by weight of MgO,

B. said particles of (1), (2) and (3) having deposited thereon from 0.001 to 0.2 percent by weight, based on the weight of (1), (2) and (3), of at least one metal selected from the group consisting of Ru, Rh, Pd, Ag, Os, Ir, Pt and Au.

3,844,981

METHOD FOR PREPARATION OF OLEFIN OXIDATION CATALYST

James A. Cusumano, Rahway, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 887,747, Dec. 23, 1969, abandoned. This application June 5, 1972, Ser. No. 259,929
Int. Cl. B01j *11/08, 11/22*
U.S. Cl. 252—471 **14 Claims**

1. A method for preparing a multimetallic olefin oxidation catalyst which comprises contacting silver oxide or a water-insoluble silver salt, selected from the group consisting of silver carbonate, silver formate or silver lactate, having a surface area of from 20 to 40 m^2/gm with an aqueous solution of one or more soluble salts of metals selected from the group consisting of copper, gold, iron, rhenium, manganese and ruthenium, whereby silver oxide or said silver salt is impregnated with said solution, drying said impregnated silver oxide or said silver salt, reducing said dried impregnated silver oxide or silver salt to bring said silver oxide or said silver salt and said impregnating salt down to their respective metallic states, and recovering an active multimetallic catalyst.

3,844,982

BUILT DETERGENT COMPOSITION

Daniel S. Connor, Colerain Township, Hamilton County, and James E. Thompson, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 879,612, Nov. 24, 1969, abandoned. This application May 11, 1971, Ser. No. 142,360
Int. Cl. C11d *3/20*
U.S. Cl. 252—544 **1 Claim**

1. A built detergent composition consisting essentially of:

a. an organic water-soluble synthetic detergent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic detergents, or mixtures thereof; and b. as a detergency builder, the biodegradable phosphorus-free, water-soluble salts of a mixture of benzene pentacarboxylic acid and benzene hexacarboxylic acid in the proportion by weight of 1:1, respectively, the cation forming the watersoluble salts of said carboxylic acids being selected from the group consisting of alkali metal, ammonium or tetraalkylammonium in which the alkyl group in methyl, ethyl, propyl or isopropyl, and

wherein the proportion by weight of the detergent to the detergency builder is from 5:1 to 1:20.

3,844,983

ROOM TEMPERATURE CURING POLY(FLUOROALKOXYPHOSPHAZENE) COPOLYMERS AND TERPOLYMERS

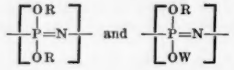
Kennard A. Reynard, Mentor, and Selwyn H. Rose, Beachwood, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated

No Drawing. Continuation-in-part of application Ser. No. 33,871, May 1, 1970, now Patent No. 3,702,833. This application Nov. 2, 1972, Ser. No. 303,187

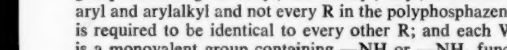
Int. Cl. C08d; C08g

U.S. Cl. 260—2 P 9 Claims

1. Polyphosphazenes the skeletal chains of which comprise randomly repeating units represented by the general formulas



wherein each R is a monovalent radical selected from the group consisting of alkyl, fluoroalkyl, aryl, substituted aryl and arylalkyl and not every R in the polyphosphazene is required to be identical to every other R; and each W is a monovalent group containing —NH or —NH_2 functionality, and wherein W is selected from the group which consists of



wherein R′ is $(—CH_2—)_a$ or $—C_6H_4(CH_2)_a$ wherein *a* is an integer from 1 to 4, and wherein X represents CH or N, R″ represents lower alkyl with up to 4 carbon atoms; R‴ represents alkyl, aryl, aralkyl, alkylaryl, and the aryl group is carbocyclic or heterocyclic; and the ratio of R/W is from about 99.5/0.5 to 65/35.

3,844,984

CRYSTALLINE COPOLYMERS OF CIS-1,4-DIHALO-2,3-EPOXYBUTANE

Edwin James Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Dec. 12, 1972, Ser. No. 314,288

Int. Cl. C08g *23/02*

U.S. Cl. 260—2 A 5 Claims

1. A crystalline copolymer of a cis-1,4-dihalo-2,3-epoxybutane and from about 0.5 to about 15 weight percent of at least one halogen-free monomer which is copolymerizable with said epoxybutane by a cationic mechanism and which is a cyclic oxide containing from 3 to 5 members in the ring.

3,844,985

PHOTOCONDUCTIVE POLYETHER COMPOSITION HAVING PENDANT PYRROLE RINGS

Hideo Fukutani, Tokyo, Konoe Miura, Yokohama, and Tetsuo Murayama, Tokyo, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

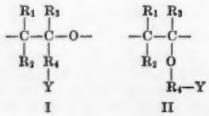
No Drawing. Filed Jan. 24, 1973, Ser. No. 326,172

Claims priority, application Japan, Feb. 1, 1972, 47/11,504

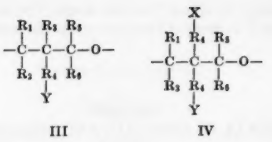
Int. Cl. C08f *3/38, 27/08;* C08g *23/20*

U.S. Cl. 260—2 A 13 Claims

1. A photoconductive polyether containing ether bonds in the principal or side chains thereof and containing pyrrole rings in the side chains which polyether contains repeating units with the formula I, II, III or IV



I II



III IV

wherein R_1, R_2, R_3, R_5 and R_6 represent a hydrogen atom, a lower alkyl group or an aryl group; R_4 represents a C_{1-6} alkylene group; X represents a halogen atom or a group containing a pyrrole ring attached to the R_4 at the pyrrole nitrogen atom; and Y represents a group containing a pyrrole ring attached to the R_4 at the pyrrole nitrogen atom.

3,844,986

SULFOALKYL ACRYLATE-OLEFIN COPOLYMER CATION EXCHANGERS

Toshiharu Tomatu, Otake, Tadao Iwata, Iwakuni, and Hidesaburo Oi, Waki, Yamaguchi-ken, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed July 11, 1973, Ser. No. 378,165

Claims priority, application Japan, July 14, 1972, 47/69,933

Int. Cl. C08f *15/02*

U.S. Cl. 260—2.2 R 3 Claims

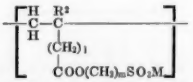
1. A cation-exchangeable structure which consists of a water-insoluble random copolymer having

(A) olefin units of formula (1)

(1)

wherein R′ is a member selected from the group consisting of a hydrogen atom and an alkyl radical having 1 to 4 carbon atoms, and

(B) units of formula (2)



(2)

wherein R^2 is a member selected from the group consisting of a hydrogen atom and a methyl radical, *l* is 0 or an integer of 5 to 8, *m* is 3 or 4, and M is a member selected from the group consisting of a hydrogen atom and alkali metals,

the amount of the units of formula (2) being 0.1 to 5 milliequivalents per gram of the random copolymer.

3,844,987

BIODEGRADABLE TRANSPLANTER CONTAINERS

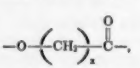
Robert A. Clendinning, New Providence, James E. Potts, Millington, and Walter D. Niegisch, Watchung, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 28, 1972, Ser. No. 275,975

Int. Cl. A01c *11/02;* C08g *41/04*

U.S. Cl. 260—7.5 19 Claims

1. An article of manufacture which comprises: (a) a biodegradable container fabricated from a mixture of substances comprising (i) from about 5 to about 95 weight percent of biodegradable thermoplastic oxyalkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said thermoplastic oxyalkanoyl polymer is attributable to recurring oxyalkanoyl units of the formula



where x is an integer having a value of 2 to 7, with the proviso that x does not equal 3; and (ii) from about 5 to about 95 weight percent of naturally occurring biodegradable product, based on the weight of said container; and (b) a medium to germinate and grow seeds or seedlings in said container.

3,844,988

TRIACETYL CELLULOSE RESIN FILMS

Haruo Takenaka, Mitsuo Okajima, Nobuo Hiratsuka, and Yasuaki Yuyama, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Continuation-in-part of application Ser. No. 186,809, Oct. 5, 1971, which is a continuation of application Ser. No. 56,077, June 29, 1970, which in turn is a continuation of application Ser. No. 653,047, July 13, 1967, all now abandoned. This application July 9, 1973, Ser. No. 377,347

Int. Cl. C08b *21/08;* **C08g** *41/04*

U.S. Cl. 260—16 **7 Claims**

1. A triacetyl cellulose resin film having increased tear resistance and folding endurance consisting essentially of a triacetyl cellulose resin having a combined acetic acid content of at least 58% and a polyprethane resin soluble in methylene chloride having a molecular weight of at least 5,000 and only OH groups as the terminal groups thereof.

3,844,989

ANTI-THROMBOGENIC POLYMER COMPOSITIONS WITH INTERNALLY BOUND HEPARIN

Noriho Harumiya, Kamakura, Hajime Miyama, Fujisawa, Hiroshi Tanzawa, Yuichi Mori, and Tadahide Sato, Kamakura, Yasuo Idezuki, Mitaka, and Motokazo Hori, Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed Dec. 7, 1972, Ser. No. 313,134

Claims priority, application Japan, Sept. 4, 1971, 46/104,127; Sept. 4, 1972, 47/87,891

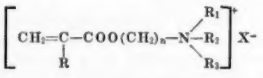
Int. Cl. A61k *17/18;* **C08b** *25/00*

U.S. Cl. 260—17.4 R **3 Claims**

1. An anti-thrombogenic polymer composition consisting essentially of water-insoluble cationic copolymers having monomer units comprising (I) hydrophilic components, (II) quaternary ammonium components, (III) hydrophobic components, and heparin internally bound therein, and having a negative Standard Membrane Potential difference,

said monomer units constituting the hydrophilic components (I) being selected from the group consisting of acrylic acid, methacrylic acid (MA), a salt of MA, an amide of MA, an alkylene glycol adduct of MA and vinylpyridine,

The monomer units constituting said quaternary ammonium salt components (II) being selected from the group consisting of dialkyldiallyl ammonium halide or



(wherein n=2 or 3, R=H or a hydrocarbon radical, R_1, R_2, R_3=a hydrocarbon radical and X=an anionic group able to form a salt with an amine nitrogen, such as a halogen), and

said monomer units constituting said hydrophobic components being selected from the group consisting of acrylic acid ester, methacrylic acid ester, acrylonitrile, vinyl acetate, vinyl chloride, styrene, α-methyl styrene, vinylidene dichloride, ethylene, propylene and butadiene,

said water-insoluble cationic copolymers consisting essentially of A percent by weight of said hydrophilic component (I) (where $30\% \geqq A \geqq 2\%$), B percent by weight of said quaternary ammonium salt components, and C percent by weight of said hydrophobic components (III) (wherein $40\% \geqq C \geqq 2\%$ and $50\% \geqq A+C \geqq 10\%$), (where $C+A+B=100\%$).

3,844,990

AQUEOUS PAINT COMPOSITIONS OF VINYL ACETATE-ETHYLENE COPOLYMER LATICES

Martin K. Lindemann, Somerville, and Rocco P. Volpe, Newark, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 444,412, Mar. 31, 1965. This application Oct. 27, 1966, Ser. No. 589,830

Int. Cl. C08f *45/14;* **C09d** *5/02*

U.S. Cl. 260—17 R **1 Claim**

1. An aqueous paint composition for application to a supporting wooden or gypsum board surface comprising a synthetic polymer latex, a pigment, and, based on the weight of the paint, 0.1–3 percent cellulosic thickener selected from the group consisting of methyl cellulose, hydroxyethyl cellulose and carboxymethyl cellulose, said synthetic polymer latex comprising an aqueous medium having dispersed therein a vinyl acetate-ethylene copolymer containing 5 to 40% ethylene in the copolymer, said copolymer being further characterized by an intrinsic viscosity of 1 to 2.5 deciliters per gram as measured in benzene at 30° C., and said dispersed copolymer having a particle size of 0.1μ to 2μ, said paint having a solids content of 45 to 60 percent by weight and said pigment being present in an amount of 10 to 1,000 parts by weight per 100 parts by weight of said vinyl acetate-ethylene latex solids.

3,844,991

AQUEOUS DISPERSION OF LOW MOLECULAR WEIGHT POLYAMIDE PARTICLES AND METHOD OF MAKING IT

Charles F. Ferraro, Trenton, and Richard A. Javick, Princeton Junction, N.J., and James A. Robertson, Levittown, Pa., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,063

Int. Cl. C08g *20/00, 51/24*

U.S. Cl. 260—18 N **13 Claims**

1. The method of forming finely-divided, water dispersible, low molecular weight, linear polyamide resin particles of loosely packed, randomly oriented, clusters of flaky sheets which comprises mixing at least one polyamide forming monomer or a high molecular weight, linear polyamide and water, heating the mixture under pressure to a temperature sufficiently high and for a period sufficient to form a linear polyamide of a predetermined low molecular weight, the temperature exceeding the melting point of the formed polyamide, thereafter instantaneously quenching the heated mixture in an aqueous quenching medium to instantaneously reduce the temperature of the heated mass to a temperature below the freezing point of the formed polyamide and to bring the mass to a pH between about 3 and about 9 thereby converting the formed polyamide into finely-divided, water dispersible, low molecular weight, linear polyamide resin particles having particle sizes within a narrow particle size distribution and to instantaneously reduce the temperature of the heated mass to a temperature where particle growth is prevented and the particle size and structure is retained and recovering a stable aqueous dispersion of the finely-divided, low molecular weight, linear polyamide resin particles in the form of loosely packed, randomly oriented, clusters of flaky sheets in the aqueous medium.

3,844,992

FAST CURE ORGANOPOLYSILOXANE RESINS

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Nov. 16, 1973, Ser. No. 416,466
Int. Cl. C08f 19/14
U.S. Cl. 260—18 S 14 Claims

1. A curable organopolysiloxane resin consisting essentially of

(A) an organopolysiloxane base copolymer consisting essentially of

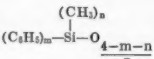
(1) 50 to 100 parts by weight of a random organopolysiloxane consisting essentially of 15 to 60 mol percent RViSiO units, 0 to 85 mol percent R_2SiO units, and 0 to 50 mol percent $RSiO_{1.5}$ units,

in which R is methyl or phenyl, Vi is vinyl; the phenyl to silicon ratio being in the range of 0.85:1.0 to 1.75:1.0, the vinyl to silicon ratio being in the range of 0.15:1.0 to 0.6:1.0; and

(2) 0 to 50 parts by weight of a block organopolysiloxane consisting essentially of

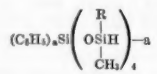
(a) polymer blocks of the average structure $(R_2SiO)_x(RViSiO)_y(RSiO_{1.5})_z$ in which R and Vi are defined above, the sum of $x+y+z$ has an average value of from 5 to 180 inclusive, at least 30 mol percent of block (a) being $(CH_3)_2SiO$ units, y has a value up to 30 mol percent of (a), z has a value up to 10 mol percent of (a), and

(b) polymer blocks of the average unit formula



in which m has an average value from 1 to 1.1 inclusive, n has an average value up to 0.1 inclusive, the siloxane units in (a) being from 10 to 75 mol percent of block copolymer (2), polysiloxanes (1) and (2) having been separately rendered essentially free of hydroxyl groups; and

(B) a hydrogen-functional organopolysiloxane of the formula



in which R is defined above, a is 0 to 3 inclusive, at least one silicon atom in (B) being attached to a phenyl group, polysiloxane (B) being present in such an amount that the ratio of hydrogen atoms in (B) to vinyl groups in (A) is in the range of 0.8:1.0 to 1.5:1.0, and

(C) at least 0.1 part by weight platinum per million parts by weight of the combined total weight of siloxanes (A) and (B).

3,844,993

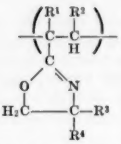
AIR-DRYING COATING COMPOSITION OF AN ACRYLIC ENAMEL AND AN ISOCYANATE CROSS-LINKING AGENT

Lester Isaac Miller, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

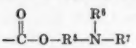
No Drawing. Continuation-in-part of abandoned application Ser. No. 157,663, June 28, 1971. This application June 30, 1972, Ser. No. 268,043
Int. Cl. C08f 27/10, 21/04; C09d 3/72
U.S. Cl. 260—22 TN 14 Claims

1. A coating composition comprising 5–60% by weight of a polymer blend and 95–40% by weight of a solvent for the polymer blend in which the blend consists essentially of

(1) 40–95% by weight of an acrylic vinyl oxazoline ester polymer that has a relative viscosity of about 1.03–1.30 measured according to ASTM–D–445–46–T, Method B at 25° C. and which consists essentially of a backbone of 50–96.5% by weight, based on the weight of the polymer, of polymerized ethylenically unsaturated monomers selected from the group consisting of an alkyl methacrylate having 1–8 carbon atoms in the alkyl group, cyclohexyl methacrylate, acrylonitrile, styrene and mixtures of these monomers and up to 20% by weight, based on the weight of the polymer, of *a* hydroxy containing monomer selected from the group consisting of hydroxy alkyl acrylate and hydroxy alkyl methacrylate having 2–4 in the alkyl groups and containing in the backbone 3–35% by weight, based on the weight of the polymer, of polymerized vinyl oxazoline esters of the formula



and having attached to the polymer backbone 0.5–15% by weight, based on the weight of the polymer, of pendent amino ester groups of the formula

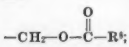


wherein

R^1 is a hydrocarbon group having 2–20 carbon atoms;

R^2 is selected from the group consisting of hydrogen and an alkyl group having 1–4 carbon atoms;

R^3 and R^4 are



R^5 is an aliphatic hydrocarbon group having 1–6 carbon atoms;

R^6 and R^7 are individually selected from the group consisting of hydrogen, a saturated aliphatic hydrocarbon group having 1–6 carbon atoms; and

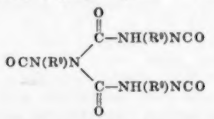
R^8 is from drying oil fatty acids, and correspondingly

(2) 5–60% by weight of an alkyd resin or a blend of alkyd resins;

wherein the alkyd resin is the esterification product of drying oil fatty acids, a polyhydric alcohol and an aromatic dicarboxylic acid or an anhydride thereof or a mixture of an aromatic dicarboxylic acid and an anhydride of an aromatic dicarboxylic acid;

and utilized with said coating composition about

0.5–200% by weight, based on the weight of the coating composition, of a polyisocyanate solution that consists essentially of 2–75% by weight of a polyisocyanate selected from the group consisting of polyisocyanate of the formula



wherein R^9 is a divalent aromatic hydrocarbon radical having 1–12 carbon atoms and methylene

bis(4-cyclohexyl isocyanate) and an aromatic solvent for the polyisocyanate that is compatible with the coating composition.

3,844,994

LITHOGRAPHIC INK COMPRISING POLYSTYRENE SULFONATE

Bheema R. Vijayendran, Bridgeport, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

No Drawing. Filed Mar. 12, 1973, Ser. No. 340,329
Int. Cl. C09d *11/02, 11/10*
U.S. Cl. 260—22 R **9 Claims**

1. A lithographic ink formulation comprising an oleophilic and a hydrophilic phase and further comprising

A. a small but effective amount of at least one polymeric surfactant taken from the group consisting of

(1) Polyoxyethylene alcohols of the formula $R—CO(CH_2CH_2O)_n—H$ wherein n is 2;

(2) Polyoxyethylene esters of saturated fatty acids of the formula $R{\cdot}COO(CH_2CH_2O)_nCH_2OH$;

(3) Polymeric polyol condensation products of Ethylene Oxide-Propylene Oxide having a molecular weight of from 1,000 to 5,000 and preferably less than 2,000 with the hydrophilic Ethylene Oxide units comprising less than 50 percent of the polymer;

(4) The polymeric polyol reaction product of Ethylene Oxide and Propylene Oxide with Ethylene Diamine and having a molecular weight of about 4,000, with the hydrophilic polyoxyethylene unit making up about 10 percent of the polymer; and

(5) Polyvinyl Pyrrolidone having a molecular weight of less than 200,000; and

B. a small but effective amount of a polystyrene sulfonate.

3,844,995

DISPERSE (COLLOID) MIXTURES OF INORGANIC THICKENER AND POLYESTER RESIN

Werner Kloker, Krefeld-Bockum, and Johannes Beckers, Kempen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 10, 1973, Ser. No. 358,845
Claims priority, application Germany, May 17, 1972, P 22 23 989.0
Int. Cl. C08g *51/04*
U.S. Cl. 260—22 CB **10 Claims**

1. A thickening agent for unsaturated polyester resins, said thickening agent comprising a colloidal mixture of

(a) from 10 to 80% by weight of an inorganic thickener selected from the group consisting of oxides and hydroxides of the elements of the second and third groups of the Periodic Table and

(b) from 90 to 20% by weight of a polyester consisting of the condensation product of at least one dicarboxylic acid, at least one monocarboxylic acid, up to 10 % by weight, based on the weight of dicarboxylic acid, of at least one member selected from the group consisting of tricarboxylic acids and tetracarboxylic acids, and at least one glycol, said polyester having an acid number of from 5 to 50 and a hydroxyl number of from 100 to 300.

3,844,996

PREPARATION OF POLYMER SOLUTIONS

William Lee Fichteman, Louisville, Ky., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,766
Int. Cl. C08c *11/72;* **C08d** *9/14*
U.S. Cl. 260—23.7 H **8 Claims**

1. A process for preparing a polymer solution from a polymer latex which comprises

(A) providing a polymer latex which is the product of carrying out a polymerization reaction to form a chloroprene polymer or a styrene-butadiene copolymer in an alkaline aqueous emulsion containing an anionic emulsifier selected from the group: rosin soap, soaps of disproportionated and hydrogenated rosin and soaps of fatty acids other than rosin fatty acids,

(B) mixing with said latex about 0.5–2.0 equivalents, per equivalent of said anionic emulsifier present in the latex, of a sensitizer which is soluble in the latex and selected from the group: amines and quaternary ammonium compounds having an anionic site and a cationic site and having a hydrocarbyl group of at least 6 carbon atoms,

(C) mixing with the latex resulting from step (B)

(1) an organic liquid which is a solvent for the polymer and is substantially water-immiscible, and

(2) an acid in an amount sufficient so that the resulting mixture has a pH of about 1–6, thereby forming a composition in which the polymer is in solution in the organic liquid, said acid being selected from the group: sulfuric acid, hydrochloric acid and nitric acid, and

(D) removing substantially all of the water from the resulting composition.

3,844,997

DISPERSING AGENTS FOR ADHESIVES

James L. Guthrie, Ashton, and Lenore L. Huffman, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 260,232, June 6, 1972. This application Nov. 19, 1973, Ser. No. 417,028
Int. Cl. C08g *51/06;* **C08j** *1/46*
U.S. Cl. 260—29.2 N **2 Claims**

1. An adhesive composition consisting of an aqueous dispersion, having a water content between 48 and 65% by weight of the total aqueous dispersion, a member of the group consisting of a polyamide of 11-aminoundecanoic acid and a polyamide of 12-aminododecanoic acid in an amount between 87 and 98.9% by weight of the solids in said dispersion, 0.1 to 3.0 weight percent of the total solids of a clay and 1.0 to 10.0 weight percent of the total solids of aluminum oxide, all of said solids having a particle size of minus 325 mesh.

3,844,998

AQUEOUS COATING COMPOSITION OF AN EPOXY ESTER RESIN AND A WATER-DISPERSIBLE CROSS-LINKING AGENT

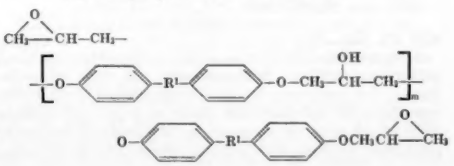
Jeffery J. Jeffery, Davison, and Aloysius N. Walus, Flint, Mich., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 8, 1972, Ser. No. 313,411
Int. Cl. C08g *45/10, 51/24*
U.S. Cl. 260—29.4 R **8 Claims**

1. A coating composition comprising about 2–50% by weight of a binder in an aqueous medium comprising up to about 20% by weight of a solvent for the binder; wherein the binder consists essentially of

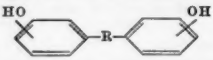
(A) 75–98% by weight, based on the weight of the binder, of an epoxy ester resin having a weight average molecular weight of about 5,000–50,000 and an acid number of about 20–120 and consisting essentially of the reaction product of

(1) an epoxy resin of the formula



wherein R^1 is an alkylene group of 1–4 carbon atoms or an alkylidene group of 3 carbon atoms and *m* is a positive integer sufficiently large to provide a molecular weight average of about 400–4000; and

(2) a diphenol of the formula



where R is an alkylene group having 1–4 carbon atoms, or an alkylidene group of 3 carbon atoms wherein the residual epoxy groups of the reaction product are reacted with a secondary amine and

(3) esterifying the reaction product with trimellitic anhydride to form an epoxy ester resin; and

(B) 2–25% by weight, based on the weight of the binder of a water-dispersible crosslinking agent selected from the group consisting of hexakis(methoxymethyl)melamine, partially methylated melamine formaldehyde, butylated melamine formaldehyde, benzoguanamine formaldehyde and methylated urea formaldehyde;

wherein the binder is neutralized with ammonium hydroxide or an amine and the resulting coating composition has a pH of about 7–9.

3,844,999

FLUOROACRYLATE COATING COMPOSITIONS

Robert G. Petrella, Glenolden, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

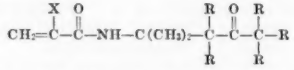
No Drawing. Continuation-in-part of abandoned application Ser. No. 70,472, Sept. 8, 1970. This application Apr. 6, 1972, Ser. No. 241,844

Int. Cl. C08f *45/24;* **C09d** *5/02*

U.S. Cl. 260—29.6 F **16 Claims**

1. An aqueous fluoroacrylate copolymer emulsion comprising a copolymer of;

(A) homogeneous and heterogeneous mixtures of a methylolated amide-containing monomer having the structure:



wherein X is H or CH_3 and R is H or $-CH_2OH$ such that at least one R and preferably an average of three R's are $-CH_2OH$ groups and the remaining R's are H; and

(B) a fluoroacrylate monomer having the structure: $R_fCH_2OCOC(R)=CH_2$, where R is H or CH_3 and R_f is:

C_nF_{2n-1}, where *n* is 6 to 16;

HC_nF_{2n}, where *n* is 2 to 12; and

$C_nF_{2n+1}(CH_2)_x$, where *n* is 3 to 12 and *x* is 0 or 1,

wherein the ratio of fluoroacrylate monomer to amide-containing monomer is from about 60:40 to 99:1.

3,845,000

POLYVINYL CHLORIDE PLASTIC FORMULATION AND METHOD OF FABRICATING THE SAME

Robert H. Pasley, Sr., Coral Gables, Fla., assignor to Royalty Designs of Florida, Inc., Hialeah, Fla.

No Drawing. Continuation of abandoned application Ser. No. 55,598, July 16, 1970. This application June 21, 1972, Ser. No. 264,848

Int. Cl. C08f *45/50*

U.S. Cl. 260—30.6 R **2 Claims**

1. A method of preparing a fireproof highly plasticized quivery essentially homopolymer polyvinyl chloride plastic, that comprises, forming a liquid mixture consisting essentially of for each 100 parts of polyvinyl chloride resin of the order of substantially 400 parts of phosphate plasticizer, heating said liquid to about 240° F. to bring the same to a gel state, further heating the gel to at least about 300 to 330° F. to convert the same into a molten form, the heating steps being effected while moving the heated material along a plurality of pipes to prevent prolonged static heating of the phosphate plasticizer in large masses that would otherwise effect color change in the plastic, and gradually cooling the said molten form to cure it into a quivery solid form.

3,845,001

SMOKE RETARDANT COMPOSITIONS

Lawrence C. Mitchell, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,801

Int. Cl. C08f *45/40, 45/56*

U.S. Cl. 260—31.8 R **8 Claims**

1. As a composition of matter, a polyvinyl halide admixed with a smoke retardant amount of a copper oxide-molybdenum oxide mixture.

3,845,002

SEALER COMPOSITION OF A METHACRYLATE COPOLYMER, AN EPOXY RESIN, POLYMETHYL METHACRYLATE AND AN ORGANIC PLASTICIZER

Roger A. Hiss, Troy, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 1, 1973, Ser. No. 328,850

Int. Cl. C08g *51/38*

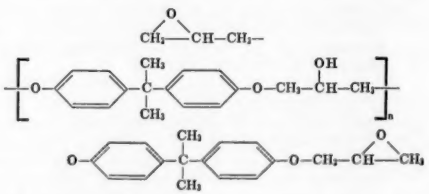
U.S. Cl. 260—31.8 M **8 Claims**

1. A sealer composition comprising 2–3% by weight of a binder dissolved in 70–98% by weight of an organic solvent for the binder; wherein the binder consists essentially of

(A) 30–45% by weight, based on the weight of the binder, of a methacrylate copolymer consisting essenting essentially of

90–99% by weight, based on the weight of the copolymer, of methyl methacrylate and correspondingly 1–10% by weight, based on the weight of the copolymer, of a hydroxy aminopropyl acrylate or a hydroxy aminopropyl methacrylate; and the copolymer having an inherent viscosity of about 0.25 to 0.35 at 0.5% polymer solids measured in ethylene dichloride solvent at 25° C.;

(B) 25–45% by weight, based on the weight of the binder, of an epoxy resin of the formula



n is a positive integer sufficiently large to provide a weight average molecular weight of about 15,000–45,000;

(C) 5–20% by weight, based on the weight of the binder, of polymethyl methacrylate having a relative viscosity of 0.25 to 0.45 measured at 0.5% polymer solids in ethylene dichloride solvent at 25° C.; and

(D) 5–25% by weight, based on the weight of the binder, of an organic plasticizer selected from the group consisting of butyl benzyl phthalate, dibutyl phthalate, 2-ethylhexyl phthalate, dicyclohexyl phthalate, dibenzyl phthalate, butyl cyclohexyl phthalate and dimethyl cyclohexyl phthalate.

3,845,003

CHEMICAL OVERLAY SOLUTION WITH NON-TOXIC PLASTICIZERS FOR SEDIMENT CONTROL

Thorndyke Roe, Jr., Oxnard, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Dec. 5, 1973, Ser. No. 422,122
Int. Cl. C08f *45/40*
U.S. Cl. 260—31.8 H **2 Claims**

1. A solution for forming a continuous, non-toxic, plastic sheet of a desired thickness on the ocean floor consisting essentially of a mixture having the following formulation as expressed in parts by weight:

Polyvinyl butyral resin	1.0
2-(2-ethoxyethoxy) ethanol	28.4
Citric Acid	13.4
Dibutyl phthalate	7.9
Dimethyldicocoammonium chloride, 75% active	0.1

3,845,004

CEMENTITIOUS COMPOSITIONS AND METHODS

Louis H. Eilers, Inola, and Christ F. Parks, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Application July 12, 1971, Ser. No. 161,875, now Patent No. 3,746,725, which is a continuation-in-part of application Ser. No. 17,290, Mar. 6, 1970, now Patent No. 3,624,018, which in turn is a continuation-in-part of application Ser. No. 486,530, Sept. 10, 1965, now Patent No. 3,511,313. Divided and this application Nov. 21, 1972, Ser. No. 308,491
Int. Cl. C08f *45/34, 45/44*
U.S. Cl. 260—32.6 N **6 Claims**

1. A composition of matter which comprises a liquid slurry of (a) from about 0.1 to about 2 parts by weight of a water-soluble carbamoyl polymer per part by weight of a liquid, gel forming organo solvent therefor composed of a liquid organic non-solvent for the polymer selected from the group consisting of propylene glycol, water-miscible alkylene oxide polymers having molecular weight up to about 600 and water-miscible alkyl and aryl ethers of the polymers wherein the etherifying moiety contains from 1 to 12 carbons and (b) at least about 0.05 part by weight per part by weight of the non-solvent, of an organic solvent for the polymer, the amount of the latter being sufficient to render the liquid mixture a solvent for the polymer, said organic solvent being ethylene diamine.

3,845,005

COATING COMPOSITION

Aaron Freiman, Brooklyn, N.Y., assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 254,605, May 18, 1972. This application June 4, 1973, Ser. No. 366,539
Int. Cl. C08c *11/22, 11/64;* **C09d** *5/16*
U.S. Cl. 260—33.6 A **6 Claims**

1. An improved liquid coating composition comprising between 20 and 40%, based on the weight of the composition, of a solubilized crosslinkable hydrocarbon rubber containing an average of at least one carbon-carbon double bond per molecule of rubber, between 1 and 10%, based on the weight of said rubber, of a crosslinking catalyst, an oxidizing agent for the catalyst and between 5 and 15%, based on the weight of said coating composition, of a triorganotin compound wherein the improvement resides in the presence of a liquid isobutylene-isoprene copolymer rubber and at least one liquid triorganotin compound exhibiting the general formula R_3SnX wherein each R is individually selected from the group consisting of alkyl radicals containing 3 and 4 carbon atoms and phenyl radicals, and X represents a phenoxy radical which may contain at least one inert substituent selected from the group consisting of halogen atoms and aryl hydrocarbon radicals, with the proviso that the concentration of the solubilized rubber is between 40 and 80%, based on the combined weight of rubber and solvent, and the weight ratio of oxidizing agent to catalyst is between 2:1 and 5:1, respectively.

3,845,006

AMINORESIN-SILICA MICROCOMPOSITES

Modesto Erneta, Princeton Junction, N.J., assignor to NL Industries, Inc., New York, N.Y.

No Drawing. Filed May 7, 1973, Ser. No. 358,035
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 N **9 Claims**

1. A copolymerized composite comprising polysilicic acid and polymeric aminoresin; said composite having a particle size range from 1μ to 50μ; said copolymerized composite containing from 40% to 99% of polysilicic acid, calculated as silica by weight, the remainder being the aminoresin polymer, said aminoresin polymer containing 0.5–2.0 moles of formaldehyde for each mole of amino employed.

3,845,007

FLAME-RESISTANT THERMOPLASTIC MOLDING COMPOSITIONS AND MOLDINGS MADE THEREFROM

Werner Nouvertné, Krefeld, Peter Rolf Müller, Coraopolis, and Günter Peilstöcker and Hugo Vernaleken, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 28, 1972, Ser. No. 293,195
Claims priority, application Germany, Sept. 29, 1971, P 21 48 598.3
Int. Cl. C08g *51/10, 39/00*
U.S. Cl. 260—37 PC **4 Claims**

1. A high impact, flame-resistant aromatic polycarbonate containing by weight:

(a) 2–6 percent glass fibers having an average fiber length of 100 to 600 μm.; and

(b) 0.01 to 1 percent of an alkali metal salt.

3,845,008

BRAKE LINING COMPOSITION COMPRISING PARTICULATE TAR RESIDUE

Andrew Mitcheli III, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,681
Int. Cl. C08g *51/08, 51/10, 51/12*
U.S. Cl. 260—37 R **6 Claims**

1. A molded brake lining composition having a coefficient friction of at least about 0.3 comprising about 30 to 70 weight percent of asbestos, about 10 to 50 weight percent of a synthetic resin binder, and about 1 to 20 weight percent of a particulate friction modifier which comprises a deoiled highly polymerized tar residue from the production of organic isocyanates by the phosgenation of aromatic diamines said residue containing a maximum of one percent by weight hydrocarbon oil and having a particle size of about 20–80 mesh.

3,845,009

CEMENT COMPOSITIONS EMPLOYING NOVEL METHACRYLATE MONOMER

Robert Johns Gander, Whitehouse, N.J., assignor to Johnson & Johnson

No Drawing. Continuation-in-part of abandoned application Ser. No. 223,369, Feb. 3, 1972. This application Oct. 29, 1973, Ser. No. 410,732
Int. Cl. C08f *7/10, 45/04;* **C08g** *33/10;* **C09k** *3/00*
U.S. Cl. 260—42.15 **12 Claims**

1. In a direct dental filling system utilizing a binder nd finely divided solid filler having an average particle

size of submicron to about 25 microns with the average particle size being within the range of about 15–30 microns, an intimate mix of monomer binder and finely divided inorganic filler with the filler being present in an amount in excess of 50% by weight of said mix and at least 10% by weight of said monomer binder consisting of the monomer 1,3-bis[2,3-di(methacryloxy)-propoxy]-benzene.

3,845,010

THERMOSET MOLDING POWDERS EMPLOYING GLYCIDYL METHACRYLATE FUNCTIONAL POLYMER AND DIBASIC ACID CROSSLINKING AGENT AND MOLDINGS THEREOF

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Continuation of abandoned application Ser. No. 209,341, Dec. 17, 1971. This application Feb. 15, 1974, Ser. No. 443,182

Int. Cl. C08f *45/10*

U.S. Cl. 260—42.18 **20 Claims**

1. A molding mixture which comprises a particulate intimate mixture of:

(A) an epoxy-functional copolymer of acrylic monomers

(1) consisting essentially of about 15 to about 40 weight percent glycidyl methacrylate, about 10 to about 30 weight percent methacrylonitrile, and a remainder consisting essentially of methyl methacrylate, and

(2) having an average molecular weight in the range of about 1,500 to about 16,000, with less than 5 percent of the molecules of said copolymer having a molecular weight below 1,000, a softening point above 25° C., and epoxide groups in its molecular structure resultant of inclusion of said glycidyl methacrylate as a constituent monomer thereof, and

(B) a C_6–C_{20} dibasic acid having melting point in the range of 30° to 160° C., said dibasic acid being present in an amount which provides about 0.8 to about 1.2 carboxyl groups per each epoxy group in the molding powder.

3,845,011

ELASTOMERIC PLATFORM FOR FURNITURE

Tore V. Saether, Mattapoisett, Mass., assignor to Acushnet Company

Continuation-in-part of application Ser. No. 710,418, Jan. 26, 1968, now Patent No. 3,502,316. This application May 26, 1969, Ser. No. 840,890

Int. Cl. C08c *11/04*; C08d *9/00*

U.S. Cl. 260—42.32 **1 Claim**

1. A member adapted for attachment to a furniture frame comprising an elastomeric platform having a durometer, Shore A, ASTM D–676–59T hardness of about 55 to about 80, a modulus at 50% elongation, ASTM D–412–62T from about 150 to about 600 p.s.i., a tear resistance, ASTM D–624–54 die C of at least about 100 pounds per inch and a tension set, ASTM D–412–62T of not more than about 35% and a permanent set not over about 15%.

3,845,012

FLAME RETARDANT POLYMER COMPOSITIONS

Anthony C. Bernardo, Fort Lee, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

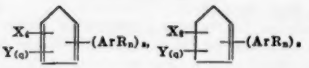
No Drawing. Filed July 28, 1972, Ser. No. 276,183

Int. Cl. C08f *45/56, 45/62*

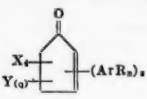
U.S. Cl. 260—45.75 B **5 Claims**

1. A fire retardant and glow suppressant polymeric composition consisting essentially of, in approximate percent by weight, (a) 40 to 65 percent of a polymer of an ethylenically unsaturated hydrocarbon selected from the group consisting of homopolymers and graft and block copolymers of ethylene, propylene and butene, (b) 23 to 40 percent of a polyhalogenated cyclopentadiene derivative selected from the group consisting of

(1) compounds of the formulas

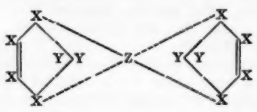


and



wherein X is halogen; Y is selected from the group consisting of halogen, alkyl and hydrogen; R is selected from the group consisting of chlorine, bromine, fluorine and trifluoromethyl; Ar is phenyl; n is from 1 to 2 when R is trifluoromethyl and n is from 2 to 4 when R is chlorine, bromine or fluorine; z is from 1 to 2, and q is from 0 to 1, q being zero when z is two;

(2) compounds of the formula



wherein X is halogen, Y is halogen, alkyl or alkoxy and Z is a tetravalent cyclic or acyclic hydrocarbon radical, (c) 2 to 7 percent of antimony oxide, (d) 3 to 7 percent of zinc borate and (e) 5 to 14 percent of talc.

3,845,013

STABILIZATION OF ETHYLENE POLYMERS

Michael Robin, Colonia, N.J., and Sheldon R. Schulte, Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

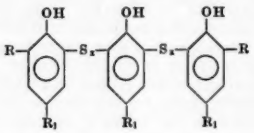
No Drawing. Filed May 8, 1972, Ser. No. 251,169

The term of this patent subsequent to Oct. 22, 1991, has been disclaimed

Int. Cl. C08f *45/58*; C08g *51/58*

U.S. Cl. 260—45.95 C **26 Claims**

1. A polymer composition of increased stability against oxidative degradation comprising an ethylene polymer and an effective stabilizing amount of compound of the general formula:



wherein x is an integer of from 1 to 2 and each R individually is an alkyl radical of 1–9 carbon atoms, and each R_1 individually is an alkyl radical of 1–4 carbon atoms, provided that at least one R_1 is CH_3.

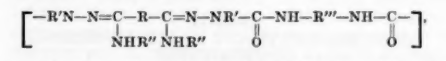
3,845,014

METAL COMPOUNDS OF POLYCARBAMOYL-AMIDRAZONES

Dieter Frank, Elsenfeld, Walter Brodowski, Amorbach, and Peter Hentschel, Kleinheubach, Germany, assignors to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,427
Claims priority, application Germany, Dec. 16, 1970, P 20 61 896.6
The term of this patent subsequent to June 26, 1990, has been disclaimed
Int. Cl. C08g *22/02, 33/10*
U.S. Cl. 260—47 CB 12 Claims

1. The chelated reaction product obtained by metallizing (A) a polycarbamoylamidrazone consisting essentially of recurring units of the formula



wherein R is a direct chemical bond, alkylene of 3 to 10 carbon atoms or aryl, R′ represents hydrogen or methyl, R″ represents hydrogen or phenyl and R‴ is a divalent organic radical having an essentially hydrocarbon structure of 2 up to about 14 carbon atoms, by chelating reaction with (B) at least one metal selected from the class consisting of metals of Groups IIa, IIIa, IVa, Va, VIII, Ib, IIb, IIIb, IVb and Vb of the long periodic system of elements, said metal being in the form of a compound thereof dissolved in water or an organic solvent, and said reaction being carried out at a temperature between about room temperature and the boiling point of the solution.

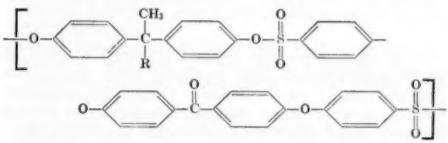
3,845,015

HIGH PERFORMANCE POLYSULFONATE RESIN

Robert J. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 31, 1973, Ser. No. 411,492
Int. Cl. C08g *17/08, 17/13*
U.S. Cl. 260—49 5 Claims

1. The polymer consisting essentially of repeating units having the formula



wherein R is an alkyl group of 1–6 carbon atoms.

3,845,016

THERMOSET MOLDING POWDERS EMPLOYING GLYCIDYL METHACRYLATE-FUNCTIONAL POLYMERS AND POLYMERIC POLYANHYDRIDE CROSSLINKING AGENTS AND MOLDINGS THEREOF

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Continuation of abandoned application Ser. No. 209,347, Dec. 17, 1971. This application Feb. 15, 1974, Ser. No. 443,183
Int. Cl. C08f *45/10*
U.S. Cl. 260—42.18 26 Claims

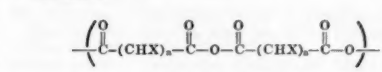
1. A molding powder which comprises a particulate, intimate mixture of

(a) a copolymer

(1) consisting of about 15 to about 40 weight percent glycidyl methylacrylate, about 10 to about 30 weight percent methacrylonitrile, and a remainder consisting essentially of methyl methacrylate, and

(2) having an average molecular weight in the range of about 1,500 to about 16,000, with less than 5 percent of the molecules of said copolymer having a molecular weight below 1,000, a softening point above 25° C., and epoxide groups in its molecular structure resultant of inclusion of said glycidyl methacrylate as a constituent monomer thereof, and

(b) a polymeric polyanhydride having the structural formula



wherein X=H, CH_2, C_2H_5 or a halogen atom and n is 4 to 10, said polymeric polyanhydride being present in an amount providing about 0.5 to about 1.5 anhydride groups per each epoxy group in the molding powder.

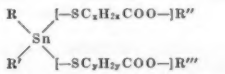
3,845,017

POLYMERS STABILIZED WITH TERPENE ALCOHOLS AND AN ORGANOTIN COMPOUND

John Desmond Collins, Albrighton, Harold Coates, Wombourne, and Iftikhar Hussain Siddiqui, Birmingham, England, assignors to Albright & Wilson Limited, Oldbury, Warley, Worcs, England

No Drawing. Filed Nov. 30, 1973, Ser. No. 420,516
Claims priority, application Great Britain, Jan. 16, 1973, 2,274/73
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.75 K 12 Claims

1. A composition suitable for stabilizing halogen containing resins, said composition comprising a terpene alcohol having a primary or secondary allylic alcohol group, and an organotin mercapto carboxylate ester of formula



where the tin atom is bonded to the sulphur or oxygen atom of each mercapto carboxylate unit, and each of R and R′, which are the same or different, represents an alkyl group of 1 to 10 carbon atoms, a cyclohexyl group or a phenyl group, each of R″ and R‴, which are the same or different, represents an organic group containing C, H and optionally O and/or S atoms, and each of x and y, which are the same or different represents an integer of 1 to 20, wherein the weight ratio organotin mercapto carboxylate ester to terpene alcohol is 20:1 to 1:1.

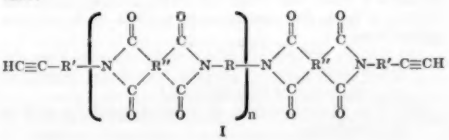
3,845,018

ACETYLENE SUBSTITUTED POLYAMIDE OLIGOMERS

Norman Bilow, Los Angeles, Abraham L. Landis, Northridge, and Leroy J. Miller, Canoga Park, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 347,501, Apr. 3, 1973. This application Nov. 6, 1973, Ser. No. 413,473
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP 23 Claims

1. A compound having the following chemical structure:



I

wherein R is poly(arylene ether) or poly(arylene thioether), R' is arylene or diarylene ether, n is an average from 1 to about 10, and R'' is

II

or

III

and X is C=O, CH_2, O. S, or a bond.

3,845,019

IMPROVED POLYURETHANE ELASTOMERS

David H. Chadwick, New Martinsville, W. Va., and Theodor Reetz, deceased, late of Columbia, S.C., by Adele Reetz, administratrix, Columbia, S.C., assignors to Baychem Corporation, New York, N.Y.

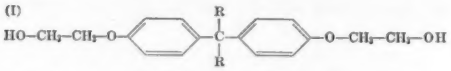
No Drawing. Continuation-in-part of abandoned applications Ser. No. 221,778, Jan. 28, 1972, and Ser. No. 222,990, Feb. 2, 1972. This application Feb. 2, 1973, Ser. No. 329,002

Int. Cl. C08g *22/10*

U.S. Cl. 260—75 NQ 10 Claims

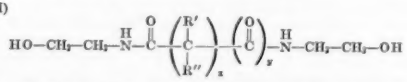
1. Polyurethane elastomers prepared by a process comprising reacting an organic polyisocyanate with an organic compound having active hydrogen atoms which are reactive with —NCO groups and a chain-extending composition comprising a mixture of a compound of the formula

(I)



wherein R is hydrogen or methyl; with a compound selected from the group consisting of C_3 to C_7 alkane diols or a compound of the formula

(II)



wherein R' and R'' are the same or different and represent hydrogen or C_1 to C_4 alkyl; x is 0 to 4 and y is 0 or 1 with the proviso that when y is 0, x is 0 and when y is 1, x is 0 to 4.

3,845,020

FACTICE-LIKE MATERIALS BASED ON POLYESTERS

Thomas G. Harris, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

No Drawing. Filed Jan. 17, 1973, Ser. No. 324,559

Int. Cl. C08g *17/14*

U.S. Cl. 260—75 TN 8 Claims

1. A process for the production of factice-like products which comprises blending a liquid unsaturated polyester with, based on the weight of the mixture, from 5 to 15 percent by weight sulfur and reacting the mixture by mixing at a temperature within the range of about 275° to 375° F. for a period of time sufficient to form a semi-cured, rubbery, crumbly mass, said liquid polyester having an average molecular weight of between about 2,000 and 5,500 and being the condensation product of, in relative proportions;

(a) 0 to 50 mol percent of a member selected from the group consisting of phthalic anhydride, o-phthalic acid and esters of o-phthalic acid;

(b) 0 to 50 mol percent of tetrahydrophthalic acid or its anhydride;

(c) 0 to 50 mol percent of trimethylolpropane monoallylether or glycerol monoallylether;

(d) 0 to 50 mol percent of a polyoxyalkylene glycol having an average molecular weight of about 400 to 4,000; and

(e) 0 to 50 mol percent of an alkylene glycol of the formula HO—R—OH wherein R is an alkylene radical of 2 to 6 carbon atoms;

50 mol percent of said reactants being selected from the acid reactants and 50 mol percent of the reactants being selected from the alcohol reactants with 5 to 70 mol percent of said reactants being unsaturated and selected from (b) and (c).

3,845,021

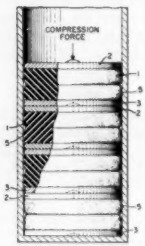
POLYUREA-URETHANE SHOCK ABSORBING COMPOSITIONS

David L. Dukes, Kent, and Charles J. Pearson, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 71,555, Sept. 11, 1970. This application Mar. 8, 1972, Ser. No. 232,727

Int. Cl. B61g *9/02*; C08g *11/06*; F16f *7/00*

U.S. Cl. 260—75 NH 2 Claims



1. A shock absorbing device comprising a series of ten loaded resilient shock absorbing units, said device characterized by not bottoming out with a 27,000 pound hammer being dropped vertically on the device from a height of about 18 inches at about 25° C., further characterized by said shock absorbing units not cracking after dropping said hammer 3 times on the device at —35° C. and additionally characterized by passing the AAR Spec M–901–E Endurance Test, starting at about 25° C., by dropping said hammer at variable vertical heights of about 1 to about 30 inches until 35 million foot pounds of energy have been expended on the device, where each of said shock absorbing units is characterized by deflecting from about 0.3 to about 0.6 inch at about 25° C. upon the application of about 1800 pounds per square inch uniformly to the end surface areas of said resilient composition when the said composition is a generally disc shaped cylindrical element with circular parallel force receiving end surfaces having diameters of about 6.5 inches, each end surface being adhered to a metal plate, a height of about 1.5 inch, and a side-wall connecting the end surfaces substantially in the form of a V-shaped groove having substantially equal length sides, the said groove extending between the said end surfaces, the volume of the solid portion of the said element being about 150 percent of the volume of the said groove, and further characterized by a —40° C. cold temperature compression test where the said composition, at —40° C., when shaped and cured to a solid circular disc with a straight side-wall, having a diameter of about 1.13 inches and a thickness of about 0.5 inch, requires a maximum pres-

sure of 7,500 pounds per square inch applied to its flat surfaces to compress the disc 40 percent, where said polyurea-urethane composition is prepared by the method which comprises reacting at least one diamine selected from the group consisting of orthodichlorobenzidine and 4,4'-methylene bis-orthochloroaniline with the reaction product of 3,3'-bitolylene-4,4'-diisocyanate and reactive hydrogen containing polymeric materials selected from (1) polytetramethylene ether glycols having an average molecular weight in the range of from about 800 to about 2200 with a total average molecular weight in the range of about 1200 to about 1500 or (2) a mixture of reactive hydrogen-containing materials comprising in the range of from about 30 to about 100 weight percent polytetramethylene ether glycols having an average molecular weight of from about 800 to about 2200 and correspondingly in the range of up to about 70 weight percent of polyester polyols having a molecular weight in the range of from about 800 to about 2200 selected from at least one of (a) caprolactone polyesters prepared from ε-caprolactone and glycols selected from diethylene glycol and straight chain hydrocarbon diols containing 4 to 6 carbon atoms, (b) adipates of adipic acid and straight chain aliphatic hydrocarbon diols containing 4 to 6 carbon atoms and (c) azelates of azelaic acid and straight chain aliphatic hydrocarbons diols containing 4 to 6 carbon atoms, with the requirements that the total average molecular weight of the mixture of polytetramethylene ether glycol and polyester polyol is in the range of about 1300 to about 1900, where the ratio of isocyanato groups of the diisocyanate to the sum of hydroxyl groups of the polyols is from about 1.7 to about 2.5, where the ratio of primary amino groups of the diamine to excess isocyanato groups over the sum of hydroxyl groups of the polyols is in the range of about 0.6 to about 1 and where the acid number of the polyols is less than about 1.

3,845,022

ELECTROPHOTOGRAPHIC COATING COMPOSITIONS HAVING BROMINE-CONTAINING POLYMER BINDERS

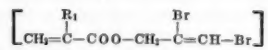
Dilip K. Ray-Chaudhuri, Somerville, Paul C. Georgoudis, Dunellen, and Hans H. Stockmann, Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Original application Aug. 4, 1971, Ser. No. 169,075, now Patent No. 3,793,293, dated Feb. 19, 1974. Divided and this application Nov. 23, 1973, Ser. No. 418,597

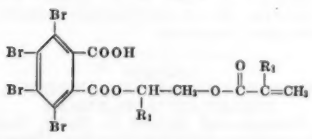
Int. Cl. C08f *15/02, 15/14, 15/16*

U.S. Cl. 260—78.5 R **1 Claim**

1. A bromine-containing, film forming interpolymer consisting essentially of repeating units derived from at least one bromine-containing monomer corresponding to the general formula



(a)



[(d)]

wherein:

R_1=H, or —CH_3,

and at least one ethylenically unsaturated monomer which does not contain bromine and said interpolymer contains about 0.01 to 0.35 mole of bromine-containing monomer per mole of total monomers.

3,845,023

HEAT-CURABLE COPOLYMERS BASED ON HYDROXYALKYLESTERS AND N-ALKOXYMETHACRYLAMIDES, SHOWING EXCELLENT ADHESIVE PROPERTIES ESPECIALLY ON METALLIC SUBSTRATES

Horst Dalibor, Hamburg-Harksheide, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 124,586, Mar. 15, 1971. This application Dec. 22, 1972, Ser. No. 317,568

Claims priority, application Switzerland, Mar. 19, 1970, 4,149/70, 4,150/70

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.73 **1 Claim**

1. A heat-curable copolymer which is soluble in organic solvents consisting of:

(a) 30 to 45% by weight of styrene,

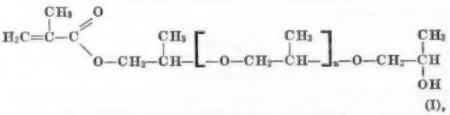
(b) 5 to 10% by weight of hydroxyethyl methacrylate,

(c) 1 to 2% by weight of acrylic acid,

(d) 18 to 22% by weight of an ether of N-methylolmethacrylamide etherified with n-butanol or isobutanol or their mixture,

(e) 25 to 35% by weight of butyl acrylate, or 2-ethylhexyl acrylate or their mixture and

(f) 5 to 10% by weight of a hydroxyalkyl ester of methacrylic acid with hydroxyl numbers of about 130 to about 150 of the following formula:



(I),

wherein n represents integers between 2 and 6.

3,845,024

CONTINUOUS PROCESS FOR PRODUCTION OF FLUOROELASTOMERS

S. David Weaver, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1972, Ser. No. 308,855

Int. Cl. C08f *1/82*

U.S. Cl. 260—80.77 **9 Claims**

1. The process for the continuous copolymerization of vinylidene fluoride with at least one other polymerizable, unsaturated fluorinated monomer in aqueous emulsion to a polymeric product having broad molecular weight distribution, said process comprising the following steps:

(1) Introducing the monomers, water, and a water-soluble free radical generator at a concentration of about 0.001–2 weight percent based on the total monomers, but no chain transfer agent, into the first of two reactors equipped with agitating means and maintained at a temperature of about 50–130° C., and a pressure of about 250–1,500 p.s.i.g. at such a flow rate that the residence time is sufficient to form a copolymer having an inherent viscosity of approximately 1.5–3.0;

(2) withdrawing the product stream from the first reactor at the same rate as the feed rate of materials into said reactor and immediately introducing said product into the second of the two reactors equipped with agitating means and maintained at a temperature of about 50–130° C. and a pressure of about 250–1,500 p.s.i.g.;

(3) introducing the said second reactor an additional quantity of fluorinated monomers and a chain transfer agent, the proportion of said chain transfer agent being about 1–6 moles per mole of free radical generator, and the residence time in said second reactor being sufficient to produce a copolymer having an inherent viscosity of approximately 0.1–0.8; and

(4) continuously withdrawing the product emulsion from the second reactor and separating the polymeric product therefrom;

with the proviso that the inherent viscosity of each copolymer is measured at a concentration of 0.1 g. of copolymer in 100 ml. of a mixture of 86.1 weight percent of tetrahydrofuran and 13.9 weight percent of dimethylformamide at 30° C.

3,845,025

TERMINATION OF ORGANOLITHIUM INITIATED POLYMERIZATIONS WITH NITROGEN OXIDE

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,445
Int. Cl. C08d *1/20, 3/04, 5/04*
U.S. Cl. 260—84.7 **21 Claims**

1. A polymerization process which comprises polymerizing at least one polymerizable monomer which is a polymerizable conjugate diene, polymerizable monovinyl-substituted aromatic compound, or both, under polymerization conditions with a hydrocarbon alkali metal initiator, wherein said process employs a minor effective coupling amount of at least one nitrogen oxide added to said polymerization process after initiation and prior to termination thereof,

wherein said nitrogen oxide is at least one of nitric oxide, nitrogen sesquioxide, nitrogen dioxide, nitrogen tetroxide, nitrogen pentoxide, nitrogen trioxide, or mixture.

3,845,026

NOVEL ELECTRICALLY CONDUCTIVE COMPOSITIONS

Isaac Michaeli and Shymon Reich, Rehovot, Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

No Drawing. Filed Nov. 16, 1972, Ser. No. 306,990
Claims priority, application Israel, Nov. 24, 1971, 38,221
Int. Cl. C08f *1/84, 3/76, 15/02*
U.S. Cl. 260—85.5 R **6 Claims**

1. An electrically conductive composition prepared by polymerizing a monomeric mixture containing at least about 90% of an acrylonitrile monomer in the presence of a perchlorate hydrate salt in the proportion of from 0.5 to 4.5 moles of said salt per mole of the acrylonitrile, and in the presence of an azo-bis-isobutyronitrile catalyst, the perchlorate hydrate salt being selected from the group consisting of the hydrates of lithium perchlorate, iron perchlorate, chromium perchlorate, manganese perchlorate, cobalt perchlorate, nickel perchlorate, copper perchlorate, magnesium perchlorate, calcium perchlorate and zinc perchlorate.

3,845,027

PROCESS FOR PRODUCING ETHYLENE-BUTADIENE COPOLYMERS

Salvatore Cucinella and Alessandro Mazzei, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Oct. 26, 1972, Ser. No. 301,146
Claims priority, application Italy, Oct. 27, 1971, 30,362/71
Int. Cl. C08d *3/04;* **C08f** *15/04*
U.S. Cl. 260—85.3 R **4 Claims**

1. A process for preparing ethylene-butadiene copolymers, said process comprising copolymerizing ethylene and butadiene in the presence of an inert solvent, at a pressure ranging from 1 to 150 atmospheres, at a temperature ranging from −30° to 100° C. and in the presence of a catalytic system comprising.

(a) an oxygen containing organic vanadium compound having V—O—C bonds selected from the group consisting of $OV(OR)_3$, $V(OR)_4$ and $V(OR)_3$ wherein R is an alkyl, aryl or cycloalkyl radical;

(b) an aluminium compound having the formula AlR'_xX_{3-x} wherein R' is an alkyl, aryl, cycloalkyl radical, or a hydrogen atom, X is a halogen atom and wherein $1 \leq x \leq 2$.

3,845,028

METHOD OF INCREASING MOLECULAR WEIGHT OF POLYMER

Tristram Walker Bethea and Adel Farhan Halasa, Akron, Ohio

No Drawing. Continuation of application Ser. No. 82,157, Oct. 19, 1970, which is a continuation of application Ser. No. 776,817, Nov. 18, 1968, both now abandoned. This application Dec. 4, 1972, Ser. No. 312,207
Int. Cl. C08d *5/02, 5/04*
U.S. Cl. 260—85.1 **1 Claim**

1. The process of increasing the molecular weight of a polymer of the class consisting of terminally lithiated homopolymers of conjugated dienes containing 4 to 6 carbon atoms and terminally lithiated copolymers of such conjugated dienes and a vinyl monomer, which comprises joining the units of the polymer with substantially equimolar amounts of tungsten hexachloride and triisobutylaluminum which causes joining of the polymer and production of a polymer of increased molecular weight.

3,845,029

POLYMERIZATION OF BUTADIENE WITH STABILIZED CATALYST SYSTEM

Morford C. Throckmorton, Akron, and Paul H. Sandstrom, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,397
Int. Cl. C08d *1/14, 3/08*
U.S. Cl. 260—94.3 **7 Claims**

1. The process for the polymerization of butadiene and butadiene in mixture with other diolefins to form polymers containing a high proportion of the butadiene in the cis-1,4 configuration comprising contacting at least one monomer from the group of butadiene and butadiene in mixture with other diolefins, under polymerization conditions, with a catalyst comprising (1) at least one organoaluminum compound, (2) at least one organonickel compound selected from the group consisting of nickel salts of carboxylic acids, organic complex compounds of nickel, π-allyl type complexes of nickel, and nickel tetracarbonyl, and (3) at least one fluorine compound selected from the group of hydrogen fluoride, boron trifluoride, complexes of hydrogen fluoride and complexes of boron trifluoride, said complexes prepared by complexing hydrogen fluoride and/or boron trifluoride with a member of the class consisting of ketones, ethers, esters, alcohols, nitriles and water, said catalyst being performed by mixing the catalyst components in the presence of a polymeric catalyst stabilizer selected from the group of polymers derived from the homopolymerization of hydrocarbon conjugated diolefins, the copolymerization of hydrocarbon conjugated diolefins and the copolymerization of hydrocarbon conjugated diolefins with styrene or methyl substituted styrene, prior to contacting with the major portion of butadiene or butadiene in combination with other diolefins to be polymerized, said catalyst being prepared or preformed in such a manner that said polymeric catalyst stabilizer is added to the mixture before the reaction between the organoaluminum compound and the organonickel compound.

3,845,030

PREPARATION OF ORGANOMETAL TERMINATED POLYMERS

Carl A. Uraneck and Richard L. Smith, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation of abandoned application Ser. No. 92,214, Nov. 23, 1970. This application Nov. 20, 1972, Ser. No. 307,773
Int. Cl. C08d *1/18, 5/02, 5/04*
U.S. Cl. 260—94.7 A **19 Claims**

1. A polymerization process which comprises polymerizing monomers selected from the group consisting of

conjugated dienes and conjugated dienes in admixture with vinyl-substituted aromatic compounds, with an alkali metal, organoalkali metal, or organoalkaline earth metal initiator, thereby producing polymer containing terminal reactive alkali or alkaline earth metal groups,

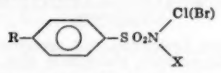
wherein the improvement comprises modifying said polymer to increase the filler-polymer interaction in filler-loaded stocks by treating said polymer containing terminal reactive alkali or alkaline earth metal groups with a modifying agent consisting essentially of at least one $R_{(z-1)}MX$ wherein R is a hydrocarbon radical containing up to 12 carbon atoms, M is a metal selected from groups *2b*, *4a*, and *5a*, X is a radical selected from the group consisting of halogen, —OR, —SR, and $—N(R)_2$ and z is an integer equal to the valence of M.

3,845,031
METHOD FOR HALOGENIZING SURFACES OF SYNTHETIC AND/OR NATURAL RUBBER MATERIAL

Josephus Sychbertus Adrianus Langerwerf, Waalwijk, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, The Hague, Netherlands

No Drawing. Filed Apr. 19, 1973, Ser. No. 352,616
Claims priority, application Netherlands, Apr. 26, 1972, 7205638
The term of this patent subsequent to Feb. 19, 1991, has been disclaimed
Int. Cl. C08d *5/04*
U.S. Cl. 260—96 **2 Claims**

1. A method for halogenizing surfaces of synthetic and/or natural rubber material with a halogen donor in order to make these surfaces better glueable to rubber or other materials, wherein in the presence of pyridine a non-acidified solution of a N-halogen sulphonamide having the general formula



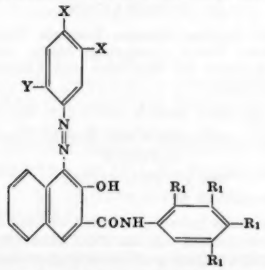
in which R is H or CH_3 and X is H or Cl or Br is applied to such surface, and further wherein, calculated on the applied solution, the quantity of pyridine amounts to 0.05 to 20%, and the quantity of N-halogen sulphonamide amounts to 0.3 to 20% by weight.

3,845,032
ALKYLBENZOATEAZOHYDROXYNAPHTHARYLIDE DYESTUFFS

William H. Armento, Albany, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 22, 1972, Ser. No. 237,090
Int. Cl. C09b *29/20;* **D06p** *3/54*
U.S. Cl. 260—204 **6 Claims**

1. A compound of the following formula:



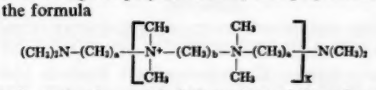
wherein one X is H and the other X is —COOR wherein R is C_{2-8} alkyl, Y is H or C_{1-2} alkyl, and R_1 is independently H, C_{1-2} alkyl or C_{1-4} alkoxy but wherein not more than two R_1's are alkyl or alkoxy.

3,845,033
COMPLEXES OF DOUBLE-STRANDED RIBONUCLEIC ACID WITH POLYQUATERNARY AMINE

Michael Raymond Harnden, Horsham, England, assignor to Beecham Group Limited, Brentford, England

No Drawing. Filed Nov. 6, 1972, Ser. No. 303,955
Claims priority, application Great Britain, Nov. 5, 1971, 51,514/71
Int. Cl. C07d *51/50*
U.S. Cl. 260—211.5 R **7 Claims**

1. An antiviral complex which is a principally ionic complex soluble in 0.15 M aqueous sodium chloride solution in which the cations are organic polymer polycations having a plurality of quaternary nitrogen sites located at intervals along the polymer chains, said polycations having the formula



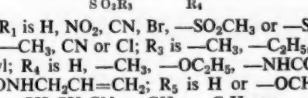
wherein each of *a* and *b*, independent of the other, is an integer of from 2 to 6 and X is a number which is such that the average molecular weight of the polycation divided by the equivalent weight which is the molecular weight of the polycation divided by the value $(2X + 2)$ is not greater than 98, and the anions are either (*a*) double-stranded ribonucleic acid polyanions, said double-stranded ribonucleic acid being of natural origin, or (*b*) polyanions of a double-stranded ribonucleic acid of natural origin which has been subject to chemical or enzymatic reaction which alters the primary and/or secondary and/or tertiary structure, provided that the resultant ribonucleic acid retains a substantial degree of base pairing between complementary strands, said antiviral complex having more than 60% of the anionic sites on the double-stranded ribonucleic acid anions neutralized by the quaternary cationic sites on the quaternary polymer.

3,845,034
PROCESS FOR PRODUCING WATER-INSOLUBLE AZO DYESTUFFS CONTAINING SULFONYL GROUPS USING A METAL SULFINATE

Hanswilli von Brachel, Offenbach, Main, and Dieter Cornelius, Darmstadt-Arheilgen, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main, Fechenheim, Germany

No Drawing. Continuation of abandoned application Ser. No. 877,821, Nov. 18, 1969. This application May 10, 1972, Ser. No. 252,348
Claims priority, application Germany, Nov. 20, 1968, P 18 09 921.3
Int. Cl. C09b *43/00;* **D06p** *3/24, 3/52*
U.S. Cl. 260—205 **3 Claims**

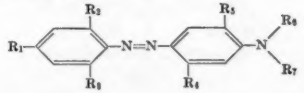
1. A process for producing a water-insoluble azo dyestuff of the formula



wherein R_1 is H, NO_2, CN, Br, $—SO_2CH_3$ or $—SO_2C_2H_5$; R_2 is H, $—CH_3$, CN or Cl; R_3 is $—CH_3$, $—C_2H_5$, $—C_4H_9$ or phenyl; R_4 is H, $—CH_3$, $—OC_2H_5$, —NHCOCH$_3$ or —NHCONHCH$_2$CH=CH$_2$; R_5 is H or $—OCH_3$; R_6 is $—C_2H_5$, $—CH_2CH_2CN$, $—CH_3$, $—C_4H_9$ or

$$—CH_2CH_2OCOCH_3$$

and R_7 is $—C_2H_5$, $—CH_2CH_2$-phenyl, $—CH_2CH_2CN$, $—CH_2CH_2OH$, $—CH_2CH_2SO_2CH_3$, $—CH_2CH_2COOCH_3$ or $—CH_2CH_2OCOH_3$, said process comprising heating an azo dyestuff of the formula



wherein R_1–R_7 inclusive are as aforesaid and R_8 is Cl, Br or NO_2 with a metal organo sulfinate wherein the metal moiety is sodium, potassium, ammonium, calcium, copper or zinc and said organo moiety is methyl, ethyl, propyl, butyl or phenyl in an inert organic solvent at a temperature of between 20 and 200° C. in the presence of a copper compound, said metal organo sulfinate being present in a molar ratio at least equivalent to the number of Cl, Br or NO_2 groups to be exchanged for a sulfonyl group and said copper compound being cuprous or cupric oxide, chloride, bromide, iodide, sulfate, rhodanide, acetate, nitrate, carbonate, sulfide, cyanide, chromite or hexacyanoferrate.

3,845,035

NOVEL N(6)-SUBSTITUTED ADENOSINE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Wolfgang Kampe, Heddesheim, Erich Fauland, Mannheim-Waldhof, Max Thiel and Wolfgang Juhran, Mannheim, and Harald Stork, Mannheim-Feudenheim, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

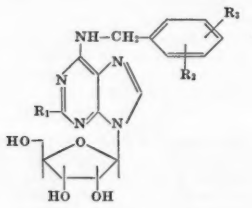
No Drawing. Filed July 12, 1972, Ser. No. 271,098

Claims priority, application Germany, July 22, 1971, P 21 36 624.5

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **17 Claims**

1. N(6)-substituted adenosine compound of the formula:



(I)

wherein

R_1 is hydrogen, halogen, amino, or hydroxyl;

R_2 is cyano or hydroxy-methyl; and

R_3 is hydrogen, halogen, lower alkyl or lower alkoxy radical;

or a pharmacologically compatible salt thereof.

3,845,036

WITHDRAWN

3,845,037

POLYCYCLIC PENTANONES

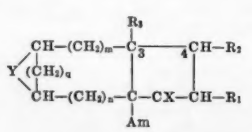
Melvin Harris Rosen, Florham Park, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 176,389, Aug. 12, 1971. This application May 30, 1972, Ser. No. 257,953

Int. Cl. C07d *27/28, 29/20, 41/04*

U.S. Cl. 260—239 B **9 Claims**

1. A compound of the formula



(I)

in which Am is di-lower alkylamino or lower alkyleneimino, X is oxygen or sulfur, each of R_1 and R_2 is phenyl, (lower alkyl)-phenyl, (lower alkoxy)-phenyl, (halogeno)-phenyl, (trifluoromethyl) - phenyl, (nitro) - phenyl, or thienyl, R_3 is hydrogen or methyl, Y is p, $(p+1)$-lower alkylene 1,2-cyclopentylene, 1,2-cyclopentenylene or 1,2-phenylene, p is an integer from 1 to 3, q is the integer 1 or 2 and the sum $m+n$ is the integer 0 or 1, the 4,5-dehydro-derivatives or therapeutically useful acid addition salts thereof.

3,845,038

2,7-BIS[2-(4-AZATRICYCLO[4.3.1.1^{3,8}]UNDEC-4-YL) ETHOXY]FLUOREN-9-ONE AND CONGENERS

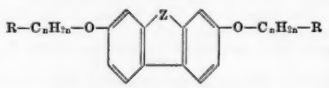
Henry W. Sause, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Sept. 28, 1972, Ser. No. 292,983

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 B **10 Claims**

1. A compound of the formula



wherein R represents 4-azatricyclo[4.3.1.1^{3,8}]undec-4-yl or 1,8,8-trimethyl-3-azabicyclo[3.2.1]oct-3-yl; Z represents carbonyl, hydroxymethylene, or methylene; and n represents an integer greater than 1 and less than 4.

3,845,039

1-POLYFLUOROALKYL-1,4-BENZODIAZEPIN-2-THIONES

Martin Steinman, Livingston, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of application Ser. No. 220,370, Jan. 24, 1972, which is a continuation-in-part of application Ser. No. 62,164 Aug. 7, 1970 both now abandoned. This application July 26, 1972, Ser. No. 275,396

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **2 Claims**

1. 7 - chloro-1-(2,2,2-trifluoroethyl)-1,3-dihydro-5-(2-fluorophenyl) - 2H - 1,4-benzodiazepin-2-thione and the pharmaceutically acceptable salts thereof.

3,845,040

PROTECTION OF STEROID CARBONYL GROUP BY ENOLISATION

Derek Harold Richard Barton, London, England, and Robert Henry Hesse, Cambridge Mass., assignors to Research Institute for Medicine and Chemistry Inc., Cambridge, Mass.

No Drawing. Filed June 5, 1973, Ser. No. 367,339

Claims priority, application Great Britain, June 12, 1972, 27,376/72

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D **23 Claims**

1. In a process for reducing a steroid wherein said steroid is reduced by treatment with an alkali aluminium hydride and said steroid contains a carbonyl group requiring protection against said reduction, the steps of protecting said carbonyl group by reacting said steroid with an alkali metal base under oxygen-free conditions to enolise said carbonyl group and regenerating said carbonyl group after

said reduction by treating the resulting reduced steroid with a source of protons.

3,845,041

7-HALOMETHYL-17-HYDROXY-3-OXO-17α-PREGN-4-ENE-21-CARBOXYLIC ACID γ-LACTONES

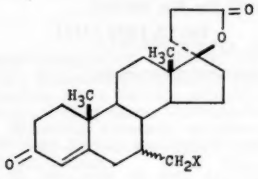
Leland J. Chinn, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 26, 1973, Ser. No. 428,301

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.57 **4 Claims**

1. A compound of the formula



wherein X represents halogen and the wavy line indicates that the 7-halomethyl can be in either α or β configuration.

3,845,042

11-SUBSTITUTED-PROSTAGLANDIN DERIVATIVES

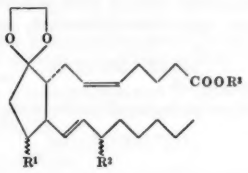
Donald P. Strike, St. Davids, and Wen-Ling Kao, Devon, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 282,200, Aug. 21, 1972. This application Aug. 1, 1973, Ser. No. 384,769

Int. Cl. C07c *13/04*

U.S. Cl. 260—240 R **3 Claims**

1. A compound of the formula



wherein R^1 is cyano, carboxy, carbamoyl, formyl, hydroxymethyl, acetyl, 1-hydroxyethyl, or nitromethyl; R^2 is hydroxy or acetoxy and R^3 is hydrogen or lower alkyl.

3,845,043

PREVENTING REVERSION DURING PREPARATION OF NUCLEUS ESTER SALTS

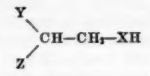
Lowell D. Hatfield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 30, 1971, Ser. No. 203,399

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **16 Claims**

1. A process for preventing reversion of the imino halide of 7 - acylamidodesacetoxycephalosporin ester to the corresponding 7-acylamidodesacetoxycephalosporinate ester during treatment of the imino halide with alcohol or thiol which comprises reacting the imino halide in an inert organic liquid diluent in the presence of hydrogen halide with β-disubstituted primary aliphatic alcohol or thiol of the formula



wherein X is oxygen or sulfur and (i) each of Y and Z is alkyl such that the alcohol or thiol has from 4 to about 12 carbon atoms, or (ii) Y and Z taken together with the carbon atom to which they are bonded are cycloalkyl having from 5 to 8 ring forming carbon atoms.

3,845,044

AMINOALKYL DERIVATIVES OF 10H-PYRAZINO (2,3-b)(1,4)BENZOTHIAZINE

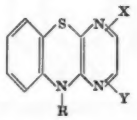
Yulan C. Tong, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 24, 1972, Ser. No. 299,884

Int. Cl. C07d *3/18*

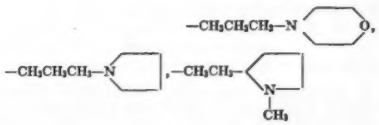
U.S. Cl. 260—243 AN **6 Claims**

1. Tricyclic pyrazino compound of the formula

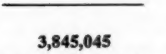


wherein either (a) X and Y are each Cl, or (b) X is Cl and Y is —OCH_3; and R is a quaternized or unquaternized tertiaryaminoalkyl radical selected from the group:

—$CH_2CH_2N(CH_3)_2$, —$CH_2CH_2CH_2N(CH_3)_2$,



or



3,845,045

DIHYDRO-1,2,4-BENZOTHIADIAZINE-1,1-DIOXIDE DERIVATIVES

Peter Werner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

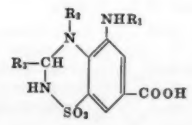
No Drawing. Filed Mar. 8, 1972, Ser. No. 232,963

Claims priority, application Great Britain, Mar. 31, 1971, 8,317/71

Int. Cl. C07d *93/32*

U.S. Cl. 260—243 D **4 Claims**

1. A compound of the class consisting of: compounds of formula I



(I)

in which R_1 represents alkyl having from 3 to 5 carbon atoms, or benzyl; R_2 represents alkyl having from 3 to 5 carbon atoms or phenyl; R_3 represents hydrogen or methyl; and pharmaceutically acceptable nontoxic salts thereof; and their cyano methyl, benzyl and C_1–C_6 alkyl esters.

3,845,046

N-TERTIARY-4-AMINOMETHYL-DIBENZO(b,e)-11-OXEPINE-2'-SPIRO-1',3'-DIOXOLANES

Claude P. Fauran and Guy M. Raynaud, Paris, Jeannine A. Eberle, Chatou, Bernard M. Pourrias, Meudon-la-Foret, and Albert Y. Le Cloarec, Saint-Maur, France, assignors to Delalande S.A., Henri-Regnault, France

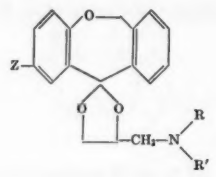
No Drawing. Filed May 25, 1972, Ser. No. 256,655

Claims priority, application France, May 28, 1971, 7119501; Mar. 23, 1972, 7210250

Int. Cl. C07d *21/00*

U.S. Cl. 260—247.5 R **9 Claims**

1. A compound of the formula



in which Z is hydrogen, alkoxy having 1 to 4 carbon atoms, or halogen, and R and R' each is alkyl having 1 to 3 carbon atoms, or

is pyrrolidino, piperidino, morpholino, hexamethyleneimino, piperazino, or piperazino substituted at N' by alkyl having 1 to 3 carbon atoms, hydroxyalkyl having 1 to 3 carbon atoms and one or two hydroxyl, aminocarbonylmethyl, aminocarbonylmethyl substituted at N by one or two alkyl having 1 to 3 carbon atoms, pyrrolidino, morpholino or hexamethyleneimino, and the pharmacologically acceptable acid addition salts thereof.

3,845,047

2,3-BIS-(ACYLMERCAPTOMETHYL)-QUINOXALINES

Christian Egli, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

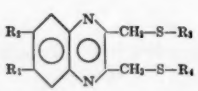
No Drawing. Filed July 6, 1971, Ser. No. 159,863

Claims priority, application Switzerland, July 6, 1970, 10,159/70

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 **5 Claims**

1. A compound of the formula



in which R_1 and R_2, independently of each other, stand for hydrogen, halogen or methoxy; R_3 and R_4 each independently stand for lower alkanoyl, lower alkanoyl substituted by halogen or hydroxy, or pyridine-2-, 3- or 4-carbonyl, and pharmaceutically acceptable salts thereof.

3,845,048

TERPENE DERIVATIVES

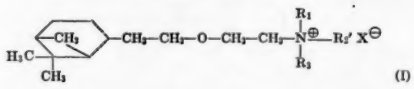
Rene Baronnet, Paris, France, assignor to Societe Berri-Balzac, Paris, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 160,182, July 6, 1971. This application Nov. 14, 1972, Ser. No. 306,434

Int. Cl. C07d *87/32*

U.S. Cl. 260—247.7 E **8 Claims**

1. A compound of the formula



(I)

in which X is selected from the group consisting of chloro and bromo, R_1 and R_2 taken separately are alkyl having 1–2 carbon atoms and taken together with the nitrogen atom to which they are attached form a member selected from the group consisting of morpholino, piperidino and pyrrolidino, R_3 is a member selected from the group consisting of benzyl, 2-bromo-4,5-dimethoxy-benzyl and 2-bromo-4,5 diethoxy-benzyl.

3,845,049

S-TRIAZINE DERIVATIVES

Bernhard Piller, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

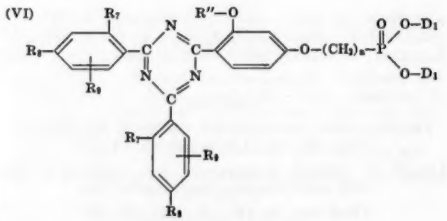
No Drawing. Filed June 14, 1972, Ser. No. 262,855

Claims priority, application Switzerland, June 23, 1971, 9,167/71

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **6 Claims**

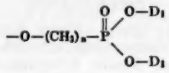
1. An s-triazine derivative of the formula



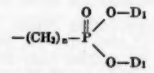
(VI)

wherein D_1 represents a hydrogen atom, an alkyl radical with 1 to 16 carbon atoms of the phenyl radical, n represents an integer from 1 to 12, R_7, R_8 and R_9 each represent a hydrogen atom, a hydroxyl radical or an alkyl radical with 1 to 4 carbon atoms, R_8 and R_9 additionally each

represent a chlorine atom and R_8 also represents the radical



and R'' represents a hydrogen atom or the radical



with D_1 and n having the above-mentioned meanings.

3,845,050
DIHYDROPYRIDAZONE COMPOUND SUBSTITUTED BY PARAIMIDAZOLIDONYLPHENYL

Rolf Lebkuecher, Horst Koenig, and August Amann, Ludwigshafen, Hubert Giertz, Limburgerhof, and Joerg Schuster, Viernheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 10, 1972, Ser. No. 295,958
Claims priority, application Germany, Oct. 14, 1971, P 21 51 216.3
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **7 Claims**

1. A compound of the formula

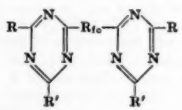
in which R is alkyl of 1 to 8 carbon atoms or said alkyl mono substituted by phenyl, methoxy, ethoxy or hydroxy; cycloalkyl of 5 to 8 carbon atoms; allyl; or butynyl; and the pharmaceutically compatible acid addition salts of said compound.

3,845,051
α,ω-DI-s-TRIAZINYL PERFLUOROPOLYOXAALKANES

Joseph La Mar Zollinger, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 70,540, Sept. 8, 1970. This application Jan. 21, 1971, Ser. No. 108,623
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS **8 Claims**

1. Normally liquid compounds of the formula



where R_{f_0} is a linkage of the formula

$$—CF_2O(CF_2CF_2O)_m(CF_2O)_nCF_2—$$

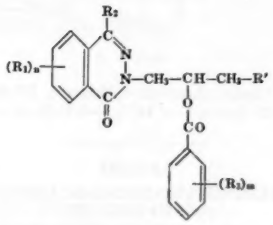
said linkage having at least 5 ether oxygen atoms and a number average molecular weight of about 400 to 40,000, m and n are integers designating randomly distributed perfluoroethyleneoxy and perfluoromethyleneoxy repeating units, respectively, the ratio m/n being 0.01/1 to 5/1, and R and R' are monovalent organic radicals of 1 to 18 carbon atoms selected from the group consisting of alkyl, cycloalkyl, phenyl perfluorinated alkyl, perfluorinated alkoxyalkyl, perfluorinated alkoxyalkyleneoxyalkyl, and perfluorinated alkoxypoly(alkyleneoxy) alkyl.

3,845,052
BASICALLY SUBSTITUTED 1(2H)-PHTHALAZINONE DERIVATIVES

Adolf Stachel, deceased, by Ingeburg Lydia Katharina Stachel, heiress, Frankfurt am Main-Fechenheim, Rudi Beyerle, Bruchkobel, Wilhelm Kunze, Bad Homburg, von der Hohe, Rolf-Eberhard Nitz, Bergen-Enkheim, and Josef Scholtholt, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,957
Claims priority, application Germany, Mar. 27, 1971, P 21 14 884.5
Int. Cl. C07d *51/06*
U.S. Cl. 260—250 P **6 Claims**

1. Basically substituted 1(2H)-phthalazinone derivative having the structural formula



and their pharmaceutically acceptable acid addition salts, wherein

R' stands for a substituent having 2–10 carbon atoms represented by the formula $—NR_4R_5$, wherein R_4 is selected from the group consisting of hydrogen, alkyl and benzyl, and R_5 is selected from the group consisting of alkyl, alkenyl, hydroxyalkyl, alkoxyalkyl, dialkylaminoalkyl, cycloalkyl, benzyl and phenethyl,

R_1 stands for a member selected from the group consisting of a hydrogen atom and an alkoxy group having 1–4 carbon atoms, which group may be in the 6,7, 7,8 or 5,6,7 position of the phthalazine nucleus,

R_2 stands for a member selected from the group consisting of hydrogen, methyl and benzyl,

R_3 stands for an alkoxy group having 1–4 carbon atoms,

m stands for an integer selected from the group consisting of 1, 2 and 3, and

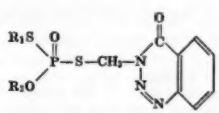
n stands for an integer selected from the group consisting of 2 and 3.

3,845,053
4-OXO-1,2,3-BENZOTRIAZINES

Jozef Drabek, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 18, 1972, Ser. No. 315,971
Claims priority, application Switzerland, Dec. 23, 1971, 18,828/71; Nov. 7, 1972, 16,185/72
Int. Cl. C07c *55/08*
U.S. Cl. 260—248 AS **5 Claims**

1. A compound of the formula



wherein R_1 represents alkoxyalkyl with 1 to 5 and 1 to 3 carbon atoms respectively in each of the moieties, or alkylthioalkyl with 1 to 5 and 1 to 3 carbon atoms respectively in each of the moieties, and R_2 represents alkyl with 1 to 5 carbon atoms.

3,845,054

SUBSTITUTED PYRIDAZONES

Franz Reicheneder, Ludwigshafen, Rudolf Kropp, Limburgerhof, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

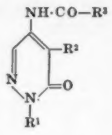
No Drawing. Filed Mar. 27, 1972, Ser. No. 238,526

Claims priority, application Germany, Apr. 10, 1971, P 21 17 681.8

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A 4 Claims

1. A substituted pyridazone of the formula



where R^1 denotes phenyl or cyclohexyl, R^2 denotes bromine, and R^3 denotes —$CHCl_2$, —CH_2Br or —H.

3,845,055

2,4-DIAMINOPYRIMIDINE-5-CARBOXYLIC ACID AMIDES

Karl Hoegerle, Basel, Christian Vogel, Binningen, Peter Boehler, Aesch, and Hans Ackermann, Bottmingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 8, 1972, Ser. No. 251,411

Claims priority, application Switzerland, May 12, 1971, 6,969/71

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N 9 Claims

1. 2-Isopropylamino - 4 - methylaminopyrimidine-5-carboxylic acid methylamide and its salts.

3,845,056

PIPERAZINALKYL DIACRYLATES

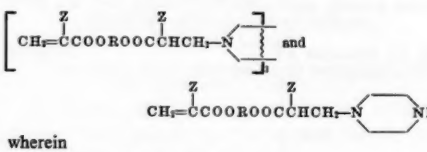
John Howard Robson and Erich Marcus, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 6,939, Jan. 29, 1970. This application Sept. 2, 1970, Ser. No. 69,136

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R 6 Claims

1. An amine acrylate from the group of



wherein

Z is hydrogen or methyl;

R is the residue of a diol of the group of saturated aliphatic diols having from 2 to 20 carbon atoms, bicyclo [2.2.1] hept-2-ene diols, cyclohexyl diols, phenyl and mono and di lower alkyl phenyl diols, polyalkylene ether diols having from 2 to 4 carbon atoms in the alkylene group, ester glycols having from 1 to an average of 17.5 ester groups; and

R''' is alkyl of from 1 to 5 carbon atoms.

3,845,057

N-SUBSTITUTED SULFINYL ALKYLENE PIPERAZINES

Isamu Maruyama, Minoo, Hisao Yamamoto, Nishinomiya, Masaru Nakao, Shigeru Sakai, and Kikuo Sasajima, Toyonaka, Sumio Kitagawa, Moriguchi, and Shigeho Inaba, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

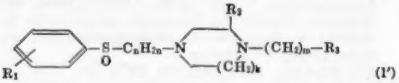
No Drawing. Filed May 19, 1971, Ser. No. 145,065

Claims priority, application Japan, May 20, 1970, 45/43,555, 45/43,556; May 22, 1970, 45/44,303; May 23, 1970, 45/44,289; May 29, 1970, 45/46,668; June 15, 1970, 45/52,254; June 18, 1970, 45/53,276; June 26, 1970, 45/56,305; June 29, 1970, 45/57,541; July 6, 1970, 45/59,300; July 17, 1970, 45/63,091

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PH 4 Claims

1. An N-substituted heterocyclic compound represented by the formula,



(I')

wherein R_1 is C_1–C_7 alkoxy or a halogen atom; R_2 is hydrogen atom; R_3 is C_1–C_7 alkoxy- or halogen-substituted phenyl; m is 0; n is 3 or 4; and k is 1, and a pharmaceutically acceptable salt thereof.

3,845,058

N-(3,4-DIHYDRO NAPHTHYL)-N' PHENYL PIPERAZINES

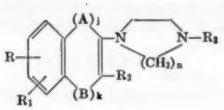
Sabino Lembo, Via Napoli 1, Pozzuoli, Italy; Rene Viterbo, 27 Rue de Fleurus, Paris, France; and Giulio Cesare Perri, Via Traversa Manzoni 2; and Michele Mastursi, Via S. Giacomo dei Capri 125, both of Naples, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 56,712, July 20, 1970. This application Jan. 17, 1972, Ser. No. 218,548

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BC 16 Claims

1. A dihydronaphthalene compound having the formula



wherein R and R_1 are each individually selected from the group consisting of hydrogen, halogen, (lower)alkyl, (lower)alkoxy, nitro, (lower)alkyl thio or (lower)alkyl sulfonyl with the proviso that one of R and R_1 is hydrogen; R_2 is selected from the group consisting of hydrogen, phenyl or carboxy; R_3 is selected from the group consisting of hydrogen, (lower)alkyl, phenyl, phenyl substituted with a halogen, trifluoromethyl, (lower)alkoxy or (lower) alkyl, picolyl, benzyl, benzyl substituted with a halogen, (lower)alkoxy or (lower)alkyl, (lower)alkoxy carbonyl, N-monoalkyl acetamide, N,N-dialkyl acetamide, N-phenyl acetamide, N-monoalkyl propionamide or N,N-dialkylpropionamide, n is a whole integer of 2 or 3, A and B are each independently selected from the radicals

—CH_2—CH_2— or —$CH(CH_3)$—CH_2—;

j is 1 and k is 0; and the (lower)alkyl and alkyl portions of the groups have 1 to 6 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

3,845,059

PREPARATION OF N,N'-DIETHANOL PIPERAZINE

Alvin F. Beale, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 19, 1972, Ser. No. 264,704
Int. Cl. C07d 51/70
U.S. Cl. 260—268 SY 8 Claims

1. The process which comprises reacting diethanolamine with one or more compounds selected from the group consisting of urea, biuret, triuret, cyanuric acid, isocyanuric acid, ammelide, and ammeline to form N,N'-diethanol piperazine, said reacting being performed at a pressure less than about superatmospheric and at a temperature in the range of about 70° C. to about 268° C.

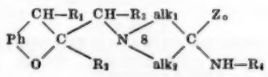
3,845,060

1-[1-(2,3 - DIHYDRO - 2 - BENZOFURYL)-ALKYL]-4 - AMINOHEXAHYDROISONICOTINIC ACID AMIDES OR NITRILES

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 197,475, Nov. 10, 1971, now Patent No. 3,759,927, which is a continuation-in-part of application Ser. No. 183,694, Sept. 24, 1971, which in turn is a continuation-in-part of application Ser. No. 105,126, Jan. 8, 1971, now abandoned. This application Jan. 22, 1973, Ser. No. 325,278
Int. Cl. C07d 29/30, 29/32
U.S. Cl. 260—293.58 6 Claims

1. A 1-[1-(2,3-dihydro-2-benzofuryl)-alkyl]-4-aminohexahydroisonicotinic acid amide or nitrile corresponding to the formula



wherein Ph is 1,2-phenylene, (lower alkyl)-1,2-phenylene, mono- or di-(lower alkoxy)-1,2-phenylene, (lower alkylenedioxy)-1,2-phenylene, (fluoro or chloro)-1,2-phenylene, (lower α-hydroxyalkyl)-1,2-phenylene or (lower alkanoyl)-1,2-phenylene, each of R_1, R_2 and R_3 is hydrogen or lower alkyl, each of alk_1 and alk_2 is lower alkylene separating the nitrogen atom from the spiro-carbon atom by two ring-carbon atoms, R_4 is hydrogen, lower alkyl, 3 to 7 ring-membered cycloalkyl or H—Ph, Z_0 is $COHNR_6$ or CN and R_6 is hydrogen, lower alkyl or lower hydroxyalkyl, or an alkali metal or acid addition salt thereof.

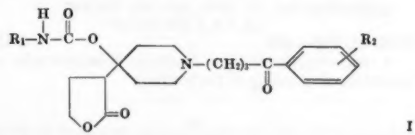
3,845,061

DIHYDRO - 3 - [4-ALKYL OR CYCLOALKYL CARBAMOYLOXY - 1 - (4 - OXO-4-ARYLBUTYL)-4-PIPERIDYL]-2-(3H)-FURANONES

Anton Ebnother, Arlesheim, and Erwin Rissi, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed June 11, 1973, Ser. No. 368,863
Claims priority, application Switzerland, June 15, 1972, 8,978/72
Int. Cl. C07d 29/26
U.S. Cl. 260—293.67 10 Claims

1. A compound of the formula



I

wherein

R_1 is alkyl of 1 to 6 carbon atoms or cycloalkyl of 3 to 8 carbon atoms, and

R_2 is hydrogen, halogen of atomic number from 9 to 35, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

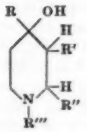
3,845,062

4-HYDROXY-PIPERIDINE DERIVATIVES AND THEIR PREPARATION

Hans Henecka and Hans Werner Schubert, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer AG

No Drawing. Continuation of application Ser. No. 529,642, Feb. 24, 1966. This application July 14, 1969, Ser. No. 850,298
Claims priority, application Germany, Feb. 27, 1965, F 45,378
Int. Cl. C07d 29/16
U.S. Cl. 260—293.83 22 Claims

1. A compound of the formula:



wherein

R is lower alkyl, phenyl or methoxyphenyl,

R' is lower alkenyl, phenyl or benzyl,

R'' is hydrogen, lower alkyl, phenyl, nitrophenyl, mono- or di-lower alkoxy phenyl, halophenyl, lower alkoxy benzyl or pyridyl, and

R''' is hydrogen.

3,845,063

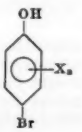
PREPARATION OF SYMMETRICAL 4-(DIALKYLAMINO)PHENOLS

Dean M. Balls, Chamblee, Ga., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 102,179, Dec. 28, 1970, which is a continuation-in-part of application Ser. No. 60,646, Aug. 3, 1970, both now abandoned. This application Dec. 29, 1972, Ser. No. 319,900
Int. Cl. C07d 29/16
U.S. Cl. 260—293.84 13 Claims

1. A process for preparing symmetrical 4-(dialkylamino)phenols corresponding to the formula

wherein R represents loweralkyl of 1 to 4 carbon atoms or both R groups taken together with the nitrogen atom represent piperidino, morpholino or pyrrolidino; X represents loweralkyl of 1 to 4 carbon atoms or loweralkoxy of 1 to 4 carbon atoms and *n* represents an integer of 0 to 3 with the proviso that when X is tertiary butyl or tertiary butoxy, that only one such moiety can be in a ring position alpha to the amino nitrogen, which consists essentially of reacting in an inert polar solvent, a 4-bromophenol of the formula



wherein X and *n* are as set forth hereinbefore, with a compound of the formula

$$HN(R)_2$$

wherein R is as set forth hereinbefore, at a pressure above atmospheric pressure and at a temperature of from about 100° C. to about 300° C.

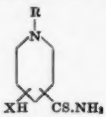
3,845,064

PIPERIDINETHIOAMIDES

Adrian Charles Ward Curran, Mortimer, Reading, England, assignor to John Wyeth & Brother Limited, Taplow Maidenhead Berkshire, England

No Drawing. Filed Oct. 24, 1972, Ser. No. 299,995
Int. Cl. C07d *29/36, 31/50*
U.S. Cl. 260—293.85 **5 Claims**

1. A compound selected from the group consisting of: (1) 1,3,4-trisubstituted piperidines having the formula



wherein R represents methyl or acetyl and X represents oxygen or sulfur, with the proviso that the —XH substituent is in either the 3- or 4-position and the $—CS.NH_2$ substituent is in the other of the 3- and 4-positions, and (2) the pharmaceutically acceptable salts of such substituted piperidines.

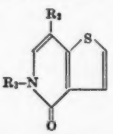
3,845,065

4-OXO-4,5-DIHYDROTHIENO[3,2-c]PYRIDINES

Tsung-Ying Shen, Westfield, and Robert L. Clark, Woodbridge, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,612
Int. Cl. C07d *63/18*
U.S. Cl. 260—294.8 C **6 Claims**

1. A compound of the formula



wherein R_2 is hydrogen, halogen, cyano or diloweralkylamino and R_3 is hydrogen or loweralkyl or pharmaceutically acceptable salts thereof provided that R_2 is not hydrogen or halogen when R_3 is hydrogen.

3,845,066

AQUEOUS BASED THERMOSETTING ACRYLAMIDE-ACRYLIC COPOLYMER COATING COMPOSITION

Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 1, 1973, Ser. No. 412,038
Int. Cl. C08f *37/06, 45/24*
U.S. Cl. 260—29.6 WB **7 Claims**

1. An aqueous coating composition comprising about 5–80% by weight of a binder of film-forming constituents and, correspondingly, 95–20% by weight of water and up to 50% by weight of a solvent for the binder; wherein the binder consists essentially of

A. about 5–95% by weight, based on the weight of the binder, of a water soluble acrylic polymer consisting essentially of

(1) 5–30% by weight, based on the weight of the polymer, of isobutoxymethyl acrylamide;

(2) 5–30% by weight, based on the weight of the polymer, of methyl methacrylate, styrene or a mixture of methyl methacrylate and styrene;

(3) 5–60% by weight, based on the weight of the polymer, of an alkyl acrylate, having 2–12 carbon atoms in the alkyl group or an alkyl methacrylate having 4–12 carbon atoms in the alkyl group; and

(4) 5–15% by weight of acrylic acid or methacrylic acid;

wherein the polymer has an acid number of about 50–105 and a weight average molecular weight of about 5,000–30,000; and, correspondingly,

B. about 95–5% by weight, based on the weight of the binder, of a dispersed water insoluble acrylic resin consisting essentially of

(1) 5–30% by weight, based on the weight of the resin, of butoxymethyl acrylamide or isobutoxymethyl acrylamide;

(2) 5–30% by weight, based on the weight of the resin, of methyl methacrylate, styrene or a mixture of methyl methacrylate and styrene;

(3) 5–64.9% by weight, based on the weight of the resin, of an alkyl acrylate having 2–12 carbon atoms in the alkyl group or an alkyl methacrylate having 4–12 carbon atoms in the alkyl group; and

(4) 0.1–3% by weight, based on the wieght of the resin, of acrylic acid or methacrylic acid;

wherein the resin is uniformly dispersed in the composition and has a particle size of about 0.05–0.4μ and a weight average molecular weight of about 35,000–100,000; and wherein the composition is neutralized to a pH of about 7–10 with a basic compound.

3,845,067

PREPARATION OF CURABLE POLYESTER-MONOMER/WATER EMULSIONS WITH A BASIC BORATE AS EMULSIFIER

Julio Lopez Mesa, 638-B Salem St., Glendale, Calif. 91203

No Drawing. Original application Jan. 4, 1971, Ser. No. 103,807, now abandoned. Divided and this application Apr. 20, 1972, Ser. No. 245,788
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.6 NR **21 Claims**

1. A process for preparing a curable polyester emulsion which comprises:

(a) forming an aqueous solution of a water soluble basic borate compound as an emulsifying agent for the polyester;

(b) adding, with agitation, the aqueous solution to a resin system comprising at least one unsaturated polyester resin prepared by the reaction of a polybasic acid and a dihydric alcohol and including at least one ethylenically unsaturated monomer to form an emulsion.

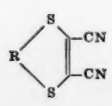
3,845,068

POLYCYANODITHIINO AROMATIC N-HETEROCYCLIC COMPOUNDS

Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Jan. 7, 1971, Ser. No. 104,799, now Patent No. 3,761,475. Divided and this application Feb. 20, 1973, Ser. No. 333,945
Int. Cl. C07d *99/10*
U.S. Cl. 260—304 **1 Claim**

1. A polycyanodithiino aromatic N-heterocyclic compound corresponding to the formula



3,845,069
1-(2-BENZOTHIAZOLYL)-1-ETHYL-3-METHYL-UREA

Werner Schafer, Leverkusen, Klaus Sasse, Schildgen, and Ludwig Eue and Robert R. Schmidt, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 9, 1972, Ser. No. 279,115
Claims priority, application Germany, Aug. 19, 1971, P 21 41 468.6
Int. Cl. C07d *91/44*
U.S. Cl. 260—305 **1 Claim**

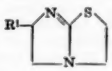
1. 1-(2-Benzothiazolyl)-1-ethyl-3-methyl-urea.

3,845,070
MANUFACTURE OF TETRAMISOLE

Michael Edward McMenim, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 10, 1972, Ser. No. 270,298
Claims priority, application Great Britain, July 27, 1971, 35,206/71
Int. Cl. C07d *99/10*
U.S. Cl. 260—306.7 **9 Claims**

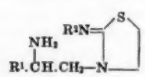
1. A process for the manufacture of compounds of the formula:



I

wherein R^1 is a member selected from the group consisting of phenyl, nitrophenyl, aminophenyl and tolyl, and pharmaceutically-acceptable acid-addition salts thereof, which comprises:

(a) reacting a thiazolidine derivative of the formula:



II

or an acid-addition salt thereof, in water at a pH below 8 and at 80 to 150° C.; or

(b) reacting said thiazolidine derivative, or an acid-addition salt thereof, in water with nitrous acid at approximately room temperature; or

(c) heating a said thiazolidine acid-addition salt at 200 to 300° C.; or

(d) heating a said thiazolidine acid-addition salt at 100 to 150° C. in a dipolar aprotic solvent;

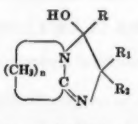
wherein R^1 has the meaning stated above, and R^2 is a member selected from the group consisting of hydrogen, alkyl of not more than 5 carbon atoms, alkenyl of not more than 5 carbon atoms, aryl of not more than 10 carbon atoms, and aralkyl of not more than 10 carbon atoms.

3,845,071
IMIDAZO[1,2-a]AZACYCLOALKANES

J. Martin Grisar and George P. Claxton, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Mar. 12, 1973, Ser. No. 340,113
Int. Cl. C07d *57/02*
U.S. Cl. 260—309.6 **6 Claims**

1. An imidazo[1,2-*a*]azacycloalkane having the formula



wherein R is phenyl or cycloalkyl of from 3 to 6 carbon atoms; R_1 and R_2 are each hydrogen and methyl; *n* is an integer of from 3 to 7; or a pharmaceutically acceptable acid addition salt thereof.

3,845,072
PROCESS FOR THE OXIDATIVE DEHYDROCYCLIZATION OF IMINES

Ugo Romano and Pietro Entonio Maoggi, Milan, and Marcello Massi Mauri, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A.

No Drawing. Filed Nov. 2, 1971, Ser. No. 194,926
Claims priority, application Italy, Nov. 2, 1970, 31,260/70
Int. Cl. C07d *27/56*
U.S. Cl. 260—319.1 **6 Claims**

1. A process for the production of high yields of indole and alkyl, aralkyl and phenyl substituted indoles through the oxidative dehydrocyclization of imines wherein oxygen and the corresponding imine represented by the formula

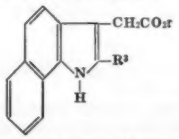
wherein N is nitrogen; C is carbonium; R is a member of the group consisting of hydrogen, lower alkyl, lower alkenyl and carbocyclic monocyclic aryl; A and B are members of the group consisting of lower alkyl, lower alkenyl, monocyclic carbocyclic arly and aralkyl represented by $CH_3C_6H_4$ and $C_2H_5C_6H_4$, are caused to react in the vapor phase by heating said oxygen and imine together in the molar range from 0.2:1 to 10:1 to a temperature in the range of 300° to 800° C. for a time ranging from 0.1 to 20 seconds in the presence of activated silica and steam.

3,845,073
2-(HALOPHENYL)-1H-BENZ[g]INDOL-3-YLACETIC ACID DERIVATIVES

Robert Anthony Newberry, Portsmouth, England, assignor to John Wyeth & Brother Limited, Taplow, England

No Drawing. Filed May 25, 1972, Ser. No. 256,674
Claims priority, application Great Britain, June 3, 1971, 18,767/71
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 R **4 Claims**

1. A compound having the formula



wherein R^3 represents a monohalophenyl radical and in which *r* represents hydrogen or lower alkyl.

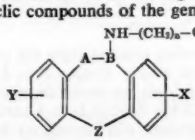
3,845,074
DIBENZO[b,f]THIAZEPIN[1,4]-11-YL AMINO ALKANOIC ACDS

Charles Malen, Fresnes, Monique Desnos, Issy les Moulineaux, and Jean-Claude Poignant, Wissous, France, assignors to Societe en nom Collectif Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

No Drawing. Original application June 22, 1970, Ser. No. 48,498, now Patent No. 3,723,466, dated Mar. 27, 1973. Divided and this application Nov. 30, 1972, Ser. No. 310,833
Claims priority, application Great Britain, June 20, 1969, 31,285/69
Int. Cl. A61k *27/00*; C07d *93/42*
U.S. Cl. 260—327 B **7 Claims**

1. A compound selected from the group consisting of;

(A) tricyclic compounds of the general formula



wherein

n is an integer of from 1 to 11 inclusive;

R is selected from the group consisting of hydrogen and lower alkyl containing 1 to 5 carbon atoms inclusive;

X and Y are selected from the group consisting of hydrogen, halogen selected from fluorine, chlorine and bromine, lower alkyl containing 1 to 5 carbon atoms inclusive, lower alkoxy-OR', lower alkylthio —SR' and lower alkylsulfonyl —SO_2R' wherein R' is a lower alkyl containing 1 to 5 carbon atoms inclusive, trifluoromethyl, nitro and cyano;

Z is selected from the group consisting of: —S—, —SO—, —SO_2—;

A—B is —N=C<; and

(B) physiologically tolerable addition salts with suitable bases or acids with R is hydrogen, and with suitable acids when R is lower alkyl containing 1 to 5 carbon atoms inclusive.

3,845,075

BENZOXANTHENE DYESTUFFS

Otto Fuchs and Helmut Troster, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

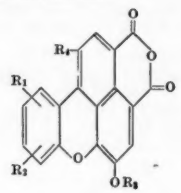
No Drawing. Original application Feb. 22, 1971, Ser. No. 117,713, now Patent No. 3,749,727. Divided and this application Jan. 15, 1973, Ser. No. 323,511

Claims priority, application Germany, Feb. 24, 1970, P 20 08 491.7

Int. Cl. C07d *7/42*

U.S. Cl. 260—335 **17 Claims**

1. A dyestuff of the formula



wherein

R_1 and R_2 each is hydrogen, chlorine, bromine, lower alkyl or lower alkoxy;

R_3 is lower alkyl, hydroxy-lower alkyl, phenyl-lower alkyl or lower alkanoyloxy-lower alkyl; and

R_4 is hydrogen, nitro, lower alkoxy or lower alkanoyloxy;

provided that lower means 1 to 4 carbon atoms.

3,845,076

METHOD OF PREPARING ALDEHYDES

Genichi Tsuchihashi, Tokyo, and Katsuyuki Ogura, Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

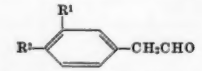
No Drawing. Filed Apr. 19, 1972, Ser. No. 245,305

Claims priority application Japan, Apr. 20, 1971, 46/24,910; Apr. 21, 1971, 46/25,257; Apr. 30, 1971, 46/27,998; June 2, 1971, 46/37,852, 46/37,853

Int. Cl. C07d *13/10*

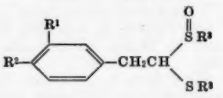
U.S. Cl. 260—340.5 **2 Claims**

1. A method of preparing an aldehyde of the formula



(I)

wherein R^1 is a member selected from the group consisting of hydrogen and alkoxy having 1 to 4 carbons, R^2 is a member selected from the group consisting of hydrogen, halogen and alkoxy having 1 to 4 carbons, and R^1 and R^2 together represent alkylidenedioxy having 1 to 4 carbons; which comprises the steps of subjecting to an acidic hydrolysis a sulfoxide of the formula



(II)

wherein R^1 and R^2 have the above meanings, and the two R^3 groups are the same and each selected from the group consisting of alkyl having 1 to 4 carbons and phenyl, said acidic hydrolysis being carried out in the presence of mineral or organic protic acids having a pK smaller than about 1 or Lewis acids.

3,845,077

PROCESS FOR THE MANUFACTURE OF TRIARYLCARBINOL LACTONES

Nigel Hughes, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

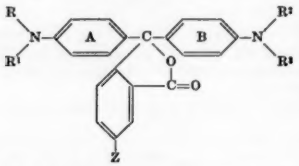
No Drawing. Filed July 29, 1971, Ser. No. 167,440

Claims priority, application Great Britain, July 23, 1971, 41,606/71

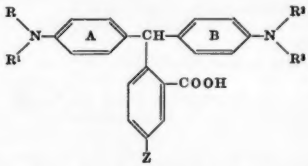
Int. Cl. C07d *5/38*

U.S. Cl. 260—343.4 **4 Claims**

1. A process for the manufacture of a triarylcarbinol lactone having the formula:



wherein R, R^1, R^2 and R^3 each independently represents methyl or ethyl, Z represents hydrogen, dimethylamino or diethylamino and rings A and B may optionally be substituted by halogen or lower alkyl, said process comprising the step of oxidising a leuco compound having the formula:



with an inorganic persulphate selected from the group consisting of ammonia persulphate, sodium persulphate, potassium persulphate and methylammonium persulphate.

3,845,078

1,5,9-TRIMETHYLCYCLODODECATRIENE DERIVATIVES

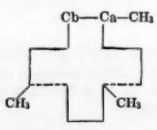
Seymour Lemberg, Elizabeth, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 551,675, May 20, 1966. This application May 15, 1967, Ser. No. 638,429

Int. Cl. C07d *1/00*

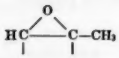
U.S. Cl. 260—348 C **9 Claims**

1. A 1,5,9-Trimethylcyclododecatriene-1,5,9 derivative of the formula



wherein

is



one or more of the dashed lines are a double bond, and the remaining dashed line or lines are single bonds: or

is

and the dashed lines represent double bonds.

3,845,079

METHOD OF PRODUCING ETHYLENE OXIDE IN CONJUNCTION WITH OTHER α-OXIDES

Mark Iosifovich Farberov, Prospekt Oktyabrya 39, kv. 7; Boris Nikolaevich Bobylev, Moskovsky Prospekt 82, kv. 44; and David Izrailevich Epshtein, ulitsa Nekrasova 63, kv. 26, all of Yaroslavl, U.S.S.R.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,392
Int. Cl. C07d *1/08, 1/14*
U.S. Cl. 260—348.5 L **5 Claims**

1. A method of producing ethylene oxide together with other α-oxides, comprising the steps of epoxidizing ethylene with an organic hydroperoxide in the presence of a catalyst comprising a compound of a metal from Groups V and VI of the periodic table, in a medium of a hydrocarbon solvent, the ethylene being under a pressure of from 50 to 300 atm. and a temperature of 70–160° C., until 10 to 85 percent of hydroperoxide is converted to form ethylene oxide; removing at least partially the unreacted ethylene from the reaction products; adding another olefin or a mixture of olefins having a higher reactivity than ethylene to the remaining reaction mixture, and epoxidizing said reagent with the unreacted hydroperoxide until 95–100 percent of the original amount of the unreacted hydroperoxide is converted, under a pressure of 1 to 60 atm., and at a temperature of 20–160° C., in the presence of said catalyst.

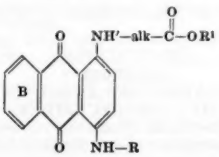
3,845,080

BLUE ANTHRAQUINOID ACID DYES

Fritz Graser, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 7, 1973, Ser. No. 357,726
Claims priority, application Great Britain, May 15, 1972, 22,615/72
Int. Cl. C09b *1/34*
U.S. Cl. 260—372 **6 Claims**

1. A blue anthraquinoid acid dye obtained by sulforating a compound of the formula in which

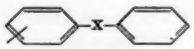


(I,)

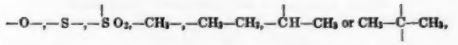
alk is a linear or branched alkylene of one to three carbon atoms,

R^1 is hydrogen or alkyl or cycloalkyl of one to fifteen carbon atoms which may bear alkoxy or alkylthio of one to eight carbon atoms, chlorine or bromine as a substituent,

R is selected from the group consisting of phenyl, naphthyl and



wherein X is a direct linkage,



wherein one to four of the aromatic hydrogens in R may be replaced by identical or different alkyl, alkoxy or alkylthio of one to four carbon atoms and halogen

and in which one or two of the hydrogens in ring B may be replaced by halogen or hydroxy.

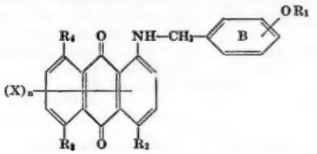
3,845,081

ANTHRAQUINONE DYESTUFFS

Jean André Paul Kienzle, Creil, and Louis Antoine Cabut, Nogents-Oise, France, assignors to Ugine Kuhlmann, Paris, France

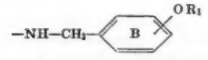
No Drawing. Filed Oct. 13, 1971, Ser. No. 189,029
Claims priority, application France, Oct. 14, 1970, 7037070
Int. Cl. C09b *1/50*
U.S. Cl. 260—377 **7 Claims**

1. Dyestuffs of the formula:



(I)

in which R_1 represents a hydrogen atom or in which —OR_1 represents a methoxy group, wherein —OR_1 is an ortho- or para-substituent, R_2 represents a hydroxy group and R_3 represents a hydroxy, amino, anilido, benzoylamino, nitro, or the residue of the formula:



(II)

and R_4 represents hydroxy, amino, benzoylamino, or the residue of formula (II), R_2 is different from R_3 or R_4, X represents a hydrogen atom, bromo, methoxy phenyl, hydroxy phenyl, or methyl radical not containing a solubilizing substituent, *n* is 1 or 2 and nucleus B is unsubstituted or substituted by at least one methyl and up to two methyl groups, or by one chloro group.

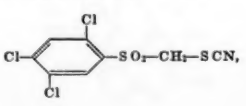
3,845,082

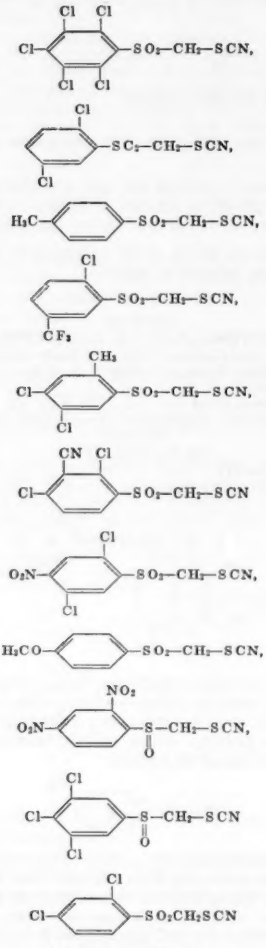
PHENYLSULPHOXYL- OR PHENYLSULPHONYL-RHODANIDES

Hendrik Dolman and Albert Tempel, van Houtenlaan, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 661,797, Aug. 21, 1967. This application July 27, 1970, Ser. No. 64,069
Claims priority, application Netherlands, Aug. 19, 1966, 6611689
Int. Cl. C07c *161/02*
U.S. Cl. 260—397.6 **13 Claims**

1. A compound selected from the group consisting of the substituted alkylenerhodanides of the formulae





and

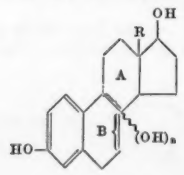
3,845,083
WITHDRAWN

3,845,084
PROCESS FOR THE CLEAVAGE OF A-RING AROMATIC, STEROIDAL METHYL ETHERS

Reinhardt P. Stein, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

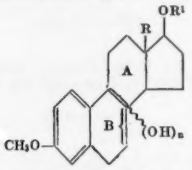
No Drawing. Filed Oct. 15, 1973, Ser. No. 406,737
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 9 Claims

1. A process for preparing a compound of the formula



I

wherein R is alkyl of from 1 to 6 carbon atoms; A and B are both saturated linkages and *n* is 1, or one of A and B is an unsaturated linkage and *n* is 0; which comprises treating a compound of the formula



II

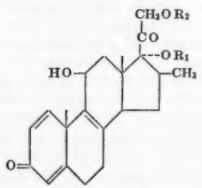
wherein A, B, R, and *n* are as defined above and R^1 is hydrogen or carboxylic acyl of from 1 to 6 carbon atoms; with a base selected from the group of aqueous methylamine, ammonium hydroxide, or an alkali metal alkoxide containing from 1 to 6 carbon atoms in an alkanol containing from 1 to 6 carbon atoms; at a temperature of from 180° to 300° C.

3,845,085
$\Delta^{8(9)}$ STEROIDS OF THE PREGNANE SERIES

Gordon Hanley Phillipps, Wembley, and Peter John May, North Harrow, England, assignors to Glaxo Laboratories Limited

No Drawing. Filed Aug. 10, 1973, Ser. No. 387,488
Claims priority, application Great Britain, Aug. 11, 1972, 37,656/72
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.45 8 Claims

1. A compound of the general formula



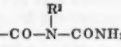
wherein R_1 represents an alkanoyl group containing 3 or 4 carbon atoms, and R_2 represents a hydrogen atom or an alkanoyl group containing 2, 3 or 4 carbon atoms.

3,845,086
N-ACYL-N-HYDROCARBYLUREAS AND THEIR PREPARATION BY OXIDATIVE HYDROLYSIS OF N-CYANOCARBIMINES

Frank Dennis Marsh, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 7, 1972, Ser. No. 242,230
Int. Cl. C07c *127/22*
U.S. Cl. 260—404.5 9 Claims

1. A compound having the formula



wherein R^1 and R^2, alike or different, are alkyl of up to 18 carbon atoms.

3,845,087
ISOMERIZATION OF 1,2-DIGLYCERIDES TO 1,3-DIGLYCERIDES

Willibrordus Theodorus Maria de Groot, Maasland, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Nov. 10, 1971, Ser. No. 197,452
Claims priority, application Great Britain, Nov. 13, 1970, 54,188/70
Int. Cl. C11c *3/00, 3/14*
U.S. Cl. 260—410.7 6 Claims

1. A process for preparing the 1,3-isomer of a diglyceride of C_4 to C_{24} straight-chain fatty acids in which a

solid 1,2-diglyceride is maintained in the solid state within 20° C. of the initial melting point for from about 2 hours to about 2 months to isomerize the 1,2-isomer to the 1,3-isomer until the weight ratio of the 1,3-diglyceride to the 1,2-diglyceride is greater than 6:1.

3,845,088

CYCLOPENTANE OR CYCLOHEXANE SUBSTITUTED UNSATURATED HYDROCARBON ESTERS HAVING JUVENILE HORMONE ACTIVITY

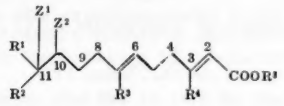
John A. Findlay, 682 George St., Fredericton, New Brunswick, Canada

No Drawing. Original application Aug. 4, 1971, Ser. No. 169,126, now Patent No. 3,761,495. Divided and this application May 7, 1973, Ser. No. 357,978

Int. Cl. A01n *9/24*; C07c *69/74*

U.S. Cl. 260—410.9 R **2 Claims**

1. Compounds of the formula



in which R^1 and R^2 together are a polymethylene radical containing 4–5 carbon atoms which in conjunction with the carbon atom to which they are joined form a cyclopentane or cyclohexane ring, each of R^3, R^4 and R^5 is an alkyl group containing 1–2 carbon atoms and Z^1 and Z^2 together are a carbon-carbon double bond between carbon atoms 10 and 11.

3,845,089

PHENYLHEPTADIENOATES

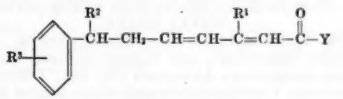
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed July 27, 1972, Ser. No. 275,646

Int. Cl. C07c *69/76*; A01n *9/24*

U.S. Cl. 260—410.9 R **5 Claims**

1. A compound selected from those of the formula A:



(A)

wherein,

each of R^1 and R^2 is lower alkyl;

R^3 is lower alkyl, chloro, the group —OR or the group —SR in which R is hydrogen or lower alkyl; and

Y is the group —OR in which R is hydrogen or lower alkyl.

3,845,090

PROCESS FOR THE PRODUCTION OF ORGANOSILOXANE-OXYALKYLENE-BLOCKCOPOLYMERS

Siegfried Nitzsche, Peter Huber, and Ewald Pirson, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed May 31, 1973, Ser. No. 365,771

Claims priority, application Germany, June 2, 1972, P 22 26 826.4

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **3 Claims**

1. A process for the production of organosiloxane-oxyalkylene-blockcopolymers in which the polyoxyalkylene blocks are linked to the organopolysiloxane blocks by Si-O-C-bonds, which comprises reacting an organopolysiloxane containing Si-bonded hydrogen atoms with polyoxyalkylene compounds having at least one alcoholic hydroxyl group in the presence of alkali substances which are insoluble under the reaction conditions and have a surface area of at least 20 $m.^2/g.$, said alkali substances are selected from the group consisting of alkali reacting clays, alkali reacting earths and alkali reacting activated charcoals.

3,845,091

N-CYANOFORMYL THIOLCARBAMATES

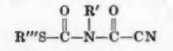
Malcolm S. Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,608

Int. Cl. C07c *155/02*

U.S. Cl. 260—455 A **8 Claims**

1. Compounds of the formula



wherein R′ is alkyl of 1 to 6 carbon atoms R‴ is alkyl of 1 to 10 carbon atoms, alkenyl of 2 to 10 carbon atoms, cycloalkyl of 3 to 10 carbon atoms, biphenyl, phenyl, aralkyl of 7 to 10 carbon atoms, or phenyl substituted with from 1 to 3 groups selected from fluorine, chlorine, bromine and alkyl of 1 to 6 carbon atoms.

3,845,092

1,3-BIS-(SUBSTITUTED-DISULFAN)-2-ALKYLAMINO PROPANES

Rupert Schneider, Riehen, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

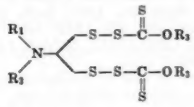
No Drawing. Continuation-in-part of abandoned application Ser. No. 230,125, Feb. 28, 1972. This application Mar. 7, 1973, Ser. No. 338,998

Claims priority, application Switzerland, Sept. 20, 1972, 13,736/72

Int. Cl. C07c *154/00*

U.S. Cl. 260—455 B **18 Claims**

1. A compound of the formula:



wherein

R_1 is alkyl of 1 to 5 carbon atoms,

R_2 is hydrogen or alkyl of 1 to 5 carbon atoms, and

R_3 is alkyl of 1 to 8 carbon atoms or cycloalkyl of 5 or 6 carbon atoms,

or an agriculturally acceptable acid addition salt thereof.

3,845,093

DIBENZO[a,d]CYCLOHEPTENE-10-CARBONITRILES

Gerald Rey-Bellet and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

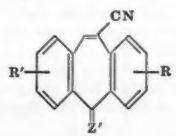
No Drawing. Application July 19, 1971, Ser. No. 164,107, now Patent No. 3,726,870, which is a division of application Ser. No. 759,499, Sept. 12, 1968, now Patent No. 3,631,103, which in turn is a continuation-in-part of abandoned application Ser. No. 431,981, Feb. 11, 1965. Divided and this application Jan. 10, 1973, Ser. No. 322,337

Claims priority, application Switzerland, Feb. 18, 1964, 1,969/64; Dec. 4, 1964, 15,709/64

Int. Cl. C07c *121/74*

U.S. Cl. 260—465 F **3 Claims**

1. A compound of the formula



wherein R and R′ are each independently selected from the group consisting of hydrogen and halogen; and Z′ is =CH—A—B wherein A is ethylene and B is selected from the group consisting of halogen and lower alkoxy of 1–4 carbon atoms.

3,845,094

PROCESS FOR VAPOR PHASE AMMOXIDATION

Howard P. Angstadt, 490 S. Middletown Road, Media, Pa. 19063

No Drawing. Filed Nov. 28, 1972, Ser. No. 310,051
Int. Cl. C07c *121/02*
U.S. Cl. 260—465 C **14 Claims**

1. In the vapor phase process of ammoxidation to form nitriles by reaction of ammonia and an organic reactant selected from the group of alkyl-substituted aromatic, aliphatic, and alicyclic hydrocarbon compounds and alkyl-substituted heterocyclic compounds and in the absence of added oxygen, the improvement of reducing the formation of carbon oxides during reaction which comprises using as catalyst a composition which is essentially free of V_2O_5 and comprised of a vanadium oxide which is intermediate V_2O_5 and V_2O_3, said catalyst being removed from said process and regenerated to the intermediate oxide prior to its in-situ conversion to significant amounts of V_2O_3.

3,845,095

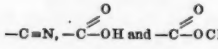
PROCESS OF DEHYDROHALOGENATION OF α,β - DIHALOGENATED PROPIONIC ACID COMPOUNDS

Ernest L. Bechstein and Donald C. Cronauer, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of application Ser. No. 36,498, May 11, 1970, which is a continuation-in-part of application Ser. No. 655,117, Sept. 21, 1967, both now abandoned. This application Jan. 22, 1973, Ser. No. 325,717
Int. Cl. C07c *69/52, 121/30, 121/52*
U.S. Cl. 260—465.7 **6 Claims**

1. In a process of dehydrohalogenating alpha,beta-dihalopropionic compounds of the formula

wherein R is a radical selected from the group consisting of hydrogen and methyl, X is a halogen selected from the group consisting of bromine and chlorine and Y is a radical selected from the group consisting of



wherein an aqueous solution containing disodium hydrogen phosphate is charged to a reactor along with an alpha,beta-dihalopropionic compound as defined above, and wherein the reactor is heated at a temperature of about 60–110° C., and wherein an alpha-haloacrylic compound is produced and collected in the vapors coming from the reactor, and wherein byproduct sodium dihydrogen phosphate and sodium halide are formed; the improvement comprising

adding sodium hydroxide to the reaction mixture at a rate sufficient to maintain a solution of disodium hydrogen phosphate by regeneration from said sodium dihydrogen phosphate; and

adding alpha,beta-propionic acid compound to the reaction mixture; and

discontinuing the addition of sodium hydroxide and alpha,beta-propionic acid compound at the point where said sodium halide begins to precipitate; whereby disodium hydrogen phosphate is continuously regenerated for dehydrohalogenating the alpha,beta-dihalopropionic compound added.

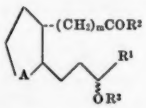
3,845,096

CYCLOPENTANE DERIVATIVES

Michael Peter Lear Caton, Upminster, Arevor Parker, Fomford, and Gordon Leonard Watkins, Dagenham, England, assignors to May & Baker Limited, Essex, England

No Drawing. Original application May 26, 1971, Ser. No. 147,273, now Patent No. 3,751,463. Divided and this application Nov. 7, 1972, Ser. No. 304,467
Claims priority, application Great Britain, May 27, 1970, 25,486/70
Int. Cl. C07c *61/36, 61/37, 69/74*
U.S. Cl. 260—468 D **15 Claims**

1. A cyclopentane of the formula:



wherein A is carbonyl or —CH(OR³)—, R¹ is alkyl of 1 through 10 carbon atoms, cycloalkyl of 3 through 10 carbon atoms, or alkyl of 1 through 4 carbon atoms substituted by cycloalkyl of 3 through 10 carbon atoms, *m* is 4 or 6, R² is hydroxy or —OR⁴, wherein R⁴ is alkyl of 1 through 4 carbon atoms, and R³ is hydrogen, alkyl of 1 through 4 carbon atoms, or alkanoyl of formula

—CO—R⁹

wherein R⁹ is alkyl of 1 through 4 carbon atoms, and, when A is —CH(OR³)—, the symbols R³ are the same, and, when R² is hydroxy, pharmaceutically acceptable non-toxic salts thereof.

3,845,097

N-SUBSTITUTED AMINO ACIDS AND NOVEL ESTER

Shigeshi Toyoshima and Seizo Kanao, Tokyo, Takeshi Toyoda, Sagamihara, and Tadashi Suyama, Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 69,993, Sept. 4, 1970, now Patent No. 3,801,633. This application Aug. 16, 1972, Ser. No. 281,042
Claims priority, application Japan, Sept. 6, 1969, 44/70,716; Aug. 19, 1971, 46/63,250, 46/63,252
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **6 Claims**

1. An N-substituted amino acid selected from the group consisting of

N-β-naphthylaminomethylleucine,
N-2-fluorenesulfonylphenylalanine,
N-β-naphthylaminomethylthreonine, and
N-9-fluorenylacetylphenylalanine.

3,845,098

CONSTRAINED AMINE CATALYSTS IN THE PRODUCTION OF URETHANES

Stephen N. Massie, Palatine, and Paul A. Pinke, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,819
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **6 Claims**

1. In a method for the reaction of an isocyanate with an alcohol at reaction conditions, the improvement which consists in the utilization of 4,4′-bis(N-pyrollidyl)diphenylmethane or 4,4′-bis-(N-piperidyl)diphenylmethane as a catalyst for the reaction.

3,845,099

PARA PHENOXY CARBONYL PHENYL ESTER OF META ACETOXYBENZOIC ACID

James Economy, Eggertsville, and Bernard E. Nowak, Lancaster, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Application Aug. 24, 1970, Ser. No. 66,566, now Patent No. 3,759,870, which is a continuation-in-part of abandoned application Ser. No. 619,577, Mar. 1, 1967. Divided and this application July 12, 1973, Ser. No. 378,761

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R 1 Claim

1. The compound (para-carbophenoxy) phenyl meta-acetoxybenzoate.

3,845,100

PROCESS FOR CONVERSION OF PARA-XYLENE TO HIGH PURITY DIMETHYL TEREPHTHALATE

Meilute O. Kusak, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,324

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 B 3 Claims

1. A preparative process for high purity dimethyl terephthalate having an acid number in the range of 0.01 to 0.03 and a freezing point in the range of 140.62 to 140.63° C. by the operating sequence: esterifying terephthalic acid having 50 p.p.m. 4-carboxybenzaldehyde or less and 160–6000 p.p.m. p-toluic acid with methanol having 0–5% water in the respective reactant weight ratio of 1.0:3.0 to 10.0 at a temperature in the range of 200 to 300° C. and a pressure in the range of 500 to 5000 p.s.i.g.; precipitating dimethyl terephthalate at a final temperature of 25–40° C. and a pressure of 130–250 mm. Hg.; separating dimethyl terephthalate precipitate from methanol mother liquor; washing the separated precipitate with methanol having 0–5% water and distilling the washed precipitate to remove as overhead fractions residual methanol and methyl esters of p-toluic acid and 4-carboxybenzaldehyde leaving as residual product high purity dimethyl terephthalate.

3,845,101

N-ALKYLTHIO-N-ALKYL ARYL CARBAMATES

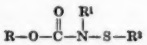
Melancthon S. Brown, deceased, late of Berkeley, Calif., by Gustave K. Kohn, special administrator, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 230,117, Feb. 28, 1972, which is a division of application Ser. No. 855,421, Sept. 4, 1969, now Patent No. 3,663,594, which in turn is a continuation-in-part of abandoned application Ser. No. 764,299, Oct. 1, 1968. This application Nov. 15, 1972, Ser. No. 306,657

Int. Cl. C07c *149/00*

U.S. Cl. 260—479 C 11 Claims

1. Compounds of the formula



wherein R is phenyl or 1-naphthyl substituted with up to 3 substituents selected from chlorine, bromine, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 3 carbon atoms and alkylthio of 1 to 3 carbon atoms, R^1 is alkyl of 1 to 6 carbon atoms and R^2 is alkyl of 1 to 10 carbon atoms.

3,845,102

PROCESS FOR PREPARING THE METHACRYLATE ESTERS OF MULTIBROMINATED PHENOL DERIVATIVES

Masaru Higuchi and Kyozo Arimoto, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

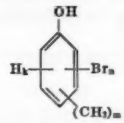
No Drawing. Filed Dec. 10, 1971, Ser. No. 206,934

Claims priority, application Japan, Dec. 14, 1970, 45/11,464

Int. Cl. C07c *69/54*

U.S. Cl. 260—479 R 12 Claims

1. A process for preparing methacrylate ester of multibromominated phenol derivative, which comprises reacting a compound of the formula:



wherein n is integer 3, 4 or 5, m is an integer 0, 1 or 2, k is an integer 0, 1 or 2, and $n+m+k=5$, with methacrylic acid chloride in the presence of a pyridine base, at a temperature in the range of 100 to 160° C.

3,845,103

N,N - DISUBSTITUTED - N'-[(N''-ALKYL-N''-TRIHALO-METHYLSULFENYL-CARBAMOYLOXY)-PHENYL]-FORMAMIDINES

Gerhard Zumach, Cologne, Engelbert Kuhle, Bergisch Gladbach, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

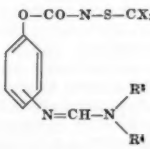
No Drawing. Filed Mar. 14, 1972, Ser. No. 234,666

Claims priority, application Germany, Mar. 19, 1971, P 21 13 299.0

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C 4 Claims

1. An N-sulfenylated carbamate of the formula



in which

R^3 and R^4 each is alkyl or alkenyl with up to 4 carbon atoms or together with the nitrogen atom to which they are attached are a piperazine, morpholine or thiomorpholine ring, and

X is fluorine or chlorine.

3,845,104

N-SUBSTITUTED N,N-BIS(2-FLUORO-2,2-DINITROETHYL) AMINES

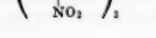
William H. Gilligan, Washington, D.C., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,628

Int. Cl. C07c *101/10*

U.S. Cl. 260—482 R 13 Claims

1. Compounds of the formula



wherein R is selected from the group consisting of t-butyl, benzyl, lower alkyl substituted benzyl, —R'OR'', —R'CO_2R'' and —R'—CH—$(OR'')_2$ wherein R' is lower alkylene and R'' is lower alkyl.

3,845,105

NITRATED AND/OR FLUORINATED ETHYL AMINO ACETIC ACIDS AND ESTERS THEREOF

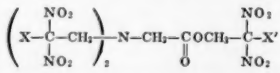
William H. Gilligan, Washington, D.C., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,629

Int. Cl. C07c *101/10*

U.S. Cl. 260—482 R **5 Claims**

1. A compound of the formula



wherein X and X' vary independently and are selected from the group consisting of F, NO_2, CH_3, and H.

3,845,106

SYNTHESES OF ALPHA,BETA-UNSATURATED ESTERS, ALDEHYDES, KETONES AND NITRILES

Hugh J. Hagemeyer, Jr., Alden E. Blood, and Thomas C. Snapp, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Original application Oct. 23, 1967, Ser. No. 677,393, now Patent No. 3,574,703. Divided and this application Nov. 21, 1969, Ser. No. 877,561

Int. Cl. C07c *69/52, 69/54*

U.S. Cl. 260—486 D **5 Claims**

1. A process for the preparation of alpha,beta-unsaturated esters by the catalytic vapor phase condensation of a mixture of formaldehyde and an alkyl ester of an aliphatic carboxylic acid, said alkyl ester possessing at least two hydrogen atoms attached to the alpha carbon atom and having the general formula R—CH_2—COOR' wherein R is hydrogen or alkyl of 1 to 6 carbon atoms and R' is an alkyl group of 1 to 6 carbon atoms, in the presence of a catalyst consisting essentially of silica gel having a pore volume greater than 0.30 cc./g. and a surface area less than 600 $m.^2/g.$

3,845,107

PHOSPHINIDYNETRIMETHANOL TRIACETATE

Sigred B. Lanoux, Lafayette, Samuel E. Ellzey, Jr., New Orleans, and George L. Drake, Jr., and Wilson A. Reeves, Metaire, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 21, 1970, Ser. No. 66,084, now Patent No. 3,725,001. Divided and this application Mar. 2, 1972, Ser. No. 231,360

Int. Cl. C07c *67/00*

U.S. Cl. 260—488 J **1 Claim**

1. A process for preparing phosphinidynetrimethanol triacetate, which process comprises:

(a) reacting acetic anhydride and tetrakis(hydroxymethyl)phosphonium chloride in pyridine at room temperature by dissolving 303 grams (1.59 moles) of said tetrakis(hydroxymethyl)phosphonium chloride in 1800 milliliters of pyridine at room temperature, and slowly adding about 727 grams (7.13 moles) of acetic anhydride while stirring the reaction mixture, to maintain a temperature of the mixture at below 40° C.;

(b) continuing the reaction until all of the tetrakis(hydroxymethyl)phosphonium chloride is consumed, the said acetic anhydride being present in excess;

(c) removing the pyridine by distillatioin under vacuum to obtain an oily residue;

(d) washing the oily distillation residue with water to remove unreacted starting materials and undesired water-soluble products thereby obtaining a brown oil which separates;

(e) drying the separated brown oil with anhydrous sodium sulfate or siutable substitute drying agent therefor; and

(f) distilling the product from (e) under vacuum to obtain phosphinidynetrimethanol triacetate, a colorless product.

3,845,108

TRANS-7-CIS-9-DODECADIEN-1-YL ACETATE

Wendell Roelofs, 652 W. North St.; Jan Kochansky, R.D. 2, Hastings Road; and Ring Cardé, New York State A. Exp. Sta., all of Geneva, N.Y. 14456

No Drawing. Filed Aug. 31, 1973, Ser. No. 393,360

Int. Cl. C07c *69/14*

U.S. Cl. 260—488 H **2 Claims**

1. A mixture of trans-7-cis-9-dodecadien-1-yl acetate and trans-7-trans-9-dodecadien-1-yl acetate.

3,845,109

HYDROXAMIC ACID DERIVATIVES OF 1-AMINOCYCLOHEXANECARBOXYLIC ACID

Harvey E. Alburn, West Chester, Donald E. Clark, Norristown, Norman H. Grant, Wynnewood, and Milton Lapidus, Rosemont, Pa., assignors to American Home Products Corporation, New York, N.Y.

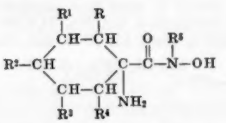
No Drawing. Continuation-in-part of application Ser. No. 874,382, Nov. 5, 1969, now Patent No. 3,703,542. This application May 22, 1972, Ser. No. 255,745

The term of this patent subsequent to Nov. 21, 1989, has been disclaimed

Int. Cl. A61k *27/00;* **C07c** *103/30*

U.S. Cl. 260—500.5 H **2 Claims**

1. A compound of the following formula:



wherein:

R and R^4 are selected from the class consisting of hydrogen and lower alkyl; R^1, R^2 and R^3 are selected from the class consisting of hydrogen, and lower alkyl, with the proviso that at least two of R, R^1, R^2, R^3 and R^4 are always hydrogen; R_5 is selected from the class consisting of hydrogen and lower alkyl; and the salts thereof with pharmaceutically acceptable acids.

3,845,110

PROCESS FOR THE RECOVERY OF N-ACYL-D-METHIONINE AND N-ACYL-L-METHIONINE

Rudolf Fahnenstich, Strotzbach, and Joachim Heese, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Apr. 11, 1972, Ser. No. 243,067

Claims priority, application Germany, May 27, 1971, P 21 26 383.2

Int. Cl. C07c *101/02*

U.S. Cl. 260—501.12 5 Claims

1. A process for preparing a salt of N - formyl - D - methionine, N-acetyl - D - methionine, N-formyl-L-methionine or N-acetyl-L-methionine with D-lysine or L-lysine of improved purity from mixtures of either N-formyl-D-methionine and N-formyl-L-methionine or N-acetyl-D-methionine and N-acetyl-L-methionine comprising forming a mixture of either N-formyl-D-methionine and N-formyl-L-methionine or N-acetyl-D-methionine and N-acetyl-L-methionine with either D-lysine or L-lysine in a solvent which is a lower alkanol containing 0 to 20% by weight of water and fractionally crystallizing from said solvent the D-lysine or L-lysine salt of one of said N-formyl-D-methionine, N-acetyl-D-methionine, N-formyl-L-methionine or N-acetyl-L-methionine by adjustng the temperature of the solution to preferentially precipitate one of said salts and recovering said precipitated salt.

3,845,111

AGMATINE PROSTAGLANDINS

Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corporation

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,869

Int. Cl. C07c *87/00*

U.S. Cl. 260—501.14 18 Claims

1. 1-amino - 4 - guanidobutane 11α,15(S)-dihydroxy-9-oxo-13-trans-prostenoate.

3,845,112

PROCESS FOR THE PREPARATION OF PERCARBOXYLIC ACIDS

Helmut Waldmann, Leverkusen, Wulf Schwerdtel, Cologne, and Wolfgang Swodenk, Odenthal-Globusch, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

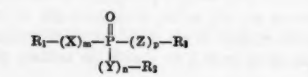
No Drawing. Filed July 29, 1971, Ser. No. 167,529

Claims priority, application Germany, Aug. 1, 1970, P 20 38 318.0

Int. Cl. C07c *73/10*

U.S. Cl. 260—502 R 25 Claims

1. In the preparation of a percarboxylic acid by reaction at a temperature of about −20 to 100° C. of a carboxylic acid or its anhydride with hydrogen peroxide, the carboxylic acid being selected from the group consisting of alkanoic, halogen substituted alkanoic, benzoic and nitro-substituted benzoic acids, the improvement which comprises adding to a dilute aqueous hydrogen peroxide solution a phosphorus compound of the formula



(I)

wherein:

X, Y and Z each individually is an oxygen atom,

an >N—C_1–C_6 alkyl or an >N—C_4–SC_7 cycloalkyl group,

m, *n* and *p* each individually is 0 or 1,

R_1, R_2 and R_3 each individually is a C_1–C_6 alkyl or C_4–C_6 cycloalkyl radical optionally substituted with halogen, OH, lower alkoxy, CN or phenyl; or a phenyl radical optionally substituted with halogen, OH, lower alkyl or alkoxy, carbo-lower alkoxy or CN, or two of R_1, R_2 and R_3 together comprise an alkylene radical forming a 5- to 7-membered heterocyclic ring containing phosphorus as a hetero atom,

removing the water from said aqueous hydrogen peroxide phosphorus compound-containing solution at least in part, and using the residue to effect said reaction with said carboxylic acid or its anhydride.

3,845,113

SULPHONIC ACID GROUP-CONTAINING COMPOUNDS

Klaus Walz, Leverkusen, Walter Hees, Cologne-Hoehenberg, and Mathieu Quaedvlieg, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

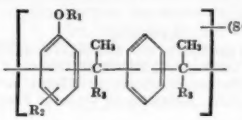
No Drawing. Filed Aug. 19, 1969, Ser. No. 851,484

Claims priority, application Germany, Aug. 28, 1968, P 17 93 299.9

Int. Cl. C07c *143/42*, *143/52*

U.S. Cl. 260—507 8 Claims

1. Sulphonic acid group-containing compounds which contain 2 to 10 recurrent structural units of the formula



in which

R_1 is hydrogen, benzyl, an unsubstituted alkyl of 1–4 carbon atoms, or an alkyl of 1 to 4 carbon atoms substituted by carboxy, carbamido, chloro, hydroxy, or sulphonyl;

R_2 is hydrogen, an alkyl of 1–16 carbon atoms, cyclohexyl, benzyl, phenylethyl, phenyl, chloro, or bromo;

R_3 is hydrogen or methyl;

n is a number between 0.7 and 2; and

M is hydrogen, an alkali metal or alkaline earth metal or ammonium.

3,845,114

PROCESS FOR CONVERTING ALKYL SULTONES TO ALKENE SULFONIC ACIDS

William A. Sweeney, Larkspur, and Ralph House, San Pablo, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 33,948, May 1, 1970. This application Jan. 3, 1972, Ser. No. 215,191

Int. Cl. C07c *143/16*

U.S. Cl. 260—513 R 4 Claims

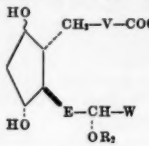
1. A process of converting an alkyl sultone of 10 to 24 carbon atoms to an alkene sulfonic acid and a hydroxyalkane sulfonic acid which consists in reacting said sultone with from 5 to 35% by weight of water at a temperature of 100–200° C. for a period of about ½ hour to about 20 hours.

3,845,115
15-LOWER ALKOXY PGF COMPOUNDS

Frank H. Lincoln, Jr., Portage, and John F. Pike and Gilbert A. Youngdale, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application May 4, 1971, Ser. No. 140,251, now abandoned. Divided and this application Jan. 26, 1973, Ser. No. 327,035
Int. Cl. C07c *61/32, 69/74*
U.S. Cl. 260—514 D 8 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein E is $—CH_2—CH_2—$ or trans —CH=CH—; wherein V is either $—(CH_2)_5—$ or cis $—CH=CH—(CH_2)_3—$, provided that E is $—CH_2CH_2—$ only when V is $—(CH_2)_5—$; wherein W is 1-penthyl or cis 1-pent-2-enyl provided that W is cis 1-pent-2-enyl only when E is trans —CH=CH— and V is

$$—CH=CH—(CH_2)_3—;$$

wherein ~ indicates attachment to the cyclopentane ring in alpha or beta configuration; wherein R_1 is hydrogen alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation, and wherein R_2 is alkyl of one to 5 carbon atoms, inclusive, with the proviso that R_2 is not methyl when E is trans —CH=CH—, V is

$$—CH=CH—(CH_2)_3—,$$

W is 1-pentyl, and ~ is alpha.

3,845,116
USE OF ANHYDRIDES TO IMPROVE OXIDATIVE COUPLING REACTIONS

Herman L. Finkbeiner, Rexford, and John B. Bush, Jr., Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 814,157, Apr. 7, 1969, which is a continuation-in-part of application Ser. No. 742,544, July 5, 1968, both now abandoned. This application July 24, 1972, Ser. No. 274,670
Int. Cl. C07c *63/52*
U.S. Cl. 260—515 R 8 Claims

1. The process whereby a C_{2-8} alkanoic acid having at least a hydrogen on the α-carbon atom is coupled through the α-carbon atom to benzene or benzene having no more than five C_{1-8} alkyl or halo substituents to produce the corresponding α-arylalkanoic acid using a manganic salt of the alkanoic acid as an oxidative coupling agent, said process being carried out in the presence of a sufficient amount of the anhydride of the alkanoic acid present as the reactant to provide an excess over the amount required to react with any water present in the initial reaction mixture.

3,845,117
PROCESS FOR PREPARATION OF PHTHALIC ACIDS

John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc.

Filed Dec. 14, 1972, Ser. No. 315,032
Int. Cl. C07c *51/20, 63/02, 63/26*
U.S. Cl. 260—524 R 13 Claims

1. A process for the oxidation of at least one member of the group consisting of meta- and para-xylene to the corresponding phthalic acid which comprises:

(a) Oxidizing, in the presence of a polyvalent heavy metal oxidation catalyst selected from at least one member of the group consisting of cobalt, manganese, vanadium and cerium, the xylene with molecular oxygen in the liquid phase within a first oxidation zone until from about 2% to not in excess of about 70% of the xylene has been converted to an oxidate comprising unreacted xylene, toluic acid and oxygen-containing C_8 aromatic compounds, less completely oxidized than toluic acid, said oxidate containing, on a xylene- and solvent-free basis, from about 15 mole percent to about 60 mole percent of tolyl alcohol, from about 15 mole percent to about 70 mole percent of tolualdehydes, from about 4 mole percent to about 65 mole percent of toluic acid, from about 0.001 mole percent to about 5 mole percent of carboxylbenzyl alcohols, from about 0.001 mole percent to about 5 mole percent of carboxybenzaldehydes and from about 0.001 mole percent to about 10 mole percent of phthalic acids;

(b) Removing at least a predominant proportion of unconverted xylene from the oxidate to recover a concentrated oxidate comprising the toluic acid and the oxygen-containing C_8 aromatic compounds, less completely oxidized than toluic acid, the extent of xylene removal being at least such that

$$M=5.27(e^{-5.355X})$$

wherein "M" is the number of moles of xylene remaining in the concentrated oxidate per mole, on a xylene-free basis, of concentrated oxidate and "X" is the fraction of the xylene converted in the first oxidation zone;

(c) Further oxidizing, in the liquid phase, the concentrated oxidate, by continuously introducing the concentrated oxidate and molecular oxygen into a second oxidation zone containing a C_2–C_6 aliphatic carboxylic acid solvent and an oxidation catalyst selected from at least one member of the group consisting of cobalt, manganese, vanadium and cerium dissolved with the solvent, said second oxidation zone being maintained at a temperature within the range of from about 50° C. to about 150° C.;

(d) Withdrawing from said second oxidation zone a slurry of the phthalic acid product in the carboxylic acid solvent; and,

(e) Recovering the phthalic acid product from the slurry.

3,845,118
PROCESS FOR THE PREPARATION OF SORBIC ACID

Hansjorg Hey, Langenhain, Taunus, and Hans-Jurgen Arpe, Fischbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,270
Claims priority, application Germany, Dec. 29, 1971, P 21 65 219.7; July 22, 1972, P 22 36 076.5, P 22 36 143.9; Aug. 25, 1972, P 22 41 836.9
Int. Cl. C07c *51/00*
U.S. Cl. 260—526 N 15 Claims

1. A process for the preparation of sorbic acid by catalytic cleavage of a polyester in solution in an enert solvent or in the absence of a solvent, said polyester being formed by a reaction of ketene with crotonic aldehyde which comprises cleaving at a temperature from 10° to 140° C., said ester in the presence of a catalyst, wherein as catalyst a compound of palladium is used in the presence of a tertiary phosphine of the formula $PR_1R_2R_3$ wherein R_1, R_2, or R_3 is an aromatic or aliphatic hydrocarbon moiety, at an atomic ratio of phosphorus to palladium of at least 2 to 1 with the tertiary phosphine being

of a concentration of more than 0.1 percent by weight of the reaction solution.

3,845,119
ORGANICS FROM TRONA BRINE BY CO_2 TREATMENT

Roy B. Duke and Ned F. Seppi, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed Nov. 10, 1972, Ser. No. 306,477
Int. Cl. C07c *51/42, 51/48*
U.S. Cl. 260—527 R **11 Claims**

1. A process for the recovery of carboxylic acids from black trona brine, comprising the steps of:
   (a) reaction of the brine with carbon dioxide to effect precipitation of the bulk of the organic matter,
   (b) filtration or centrifugation of the reaction mixture to separate a mixture of insoluble polymeric carboxylic acids from a filtrate containing a mixture of C_4–C_{14} dicarboxylic acids or sodium salts thereof
   (c) recovering a mixture of C_4–C_{14} dicarboxylic acids from the filtrate.

3,845,120
PRODUCTION OF ACRYLIC ACID BY OXIDATION OF ACROLEIN

Richard Krabetz, Kirchheim, and Heinz Engelbach, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,872
Claims priority, application Germany, Feb. 22, 1969, P 19 08 965.7
Int. Cl. C07c *51/32*
U.S. Cl. 260—530 N **3 Claims**

1. A process for the production of acrylic acid which comprises oxidizing acrolein with a gas containing oxygen in the gas phase at elevated temperature and in the presence of a catalyst which, in addition to oxygen, consists essentially of (a) molybdenum, (b) tungsten, (c) vanadium and (d) a member selected from the group consisting of copper:manganese in an atomic ratio on the order of 1:1 and copper:nickel in an atomic ratio on the order of 1:1, and wherein the atomic ratio of (a):(b):(d) is 1 to 20:0.01 to 10:1 and the atomic ratio of vanadium:molybdenum is 0.2 to 6:6.

3,845,121
PROCESS FOR SEPARATING CARBONYLATION PRODUCTS FROM REACTION MIXTURE WITHOUT CATALYST DECOMPOSITION

Lloyd S. Eubanks and Roy T. Eby, Texas City, Carl M. Cruse, Dickinson, and Henry L. Epstein, Clear Lake, Tex., and Harold R. Null, Creve Coeur, and Frederick E. Rosenberger, Des Peres, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 10, 1971, Ser. No. 196,007
Int. Cl. C07c *51/14, 51/12, 67/00*
U.S. Cl. 260—532 **10 Claims**

1. In a carbonylation process wherein at least one reactant selected from the group consisting of an olefin, an alcohol, an ester derivative of said alcohol, a halide derivative of said alcohol and an ether derivative of said alcohol is reacted with carbon monoxide in a liquid phase in a reaction zone and in the presence of a catalyst system that contains (a) a rhodium or iridium component, and (b) an iodine or bromine component, the improvement which comprises passing at least a portion of the liquid reaction mass to a separation zone without the addition of heat, said separation zone having a pressure of at least 20 p.s.i. less than the pressure in said reaction zone, to vaporize at least a portion of the carbonylation products, withdrawing the vaporized carbonylation products and recycling the remaining liquid reaction mass to said reaction zone.

3,845,122
METHOD OF PRODUCING PURE PERCHLOROMETHYLMERCAPTAN

Boris Zupancic, Ljubljana, Yugoslavia, assignor to LEK tovarna farmacevtskih in Kemicnih izdelkov, Ljubljana, Yugoslavia

No Drawing. Filed Apr. 6, 1973, Ser. No. 348,651
Claims priority, application Yugoslavia, Apr. 14, 1972, P 1,018/72
Int. Cl. C07c *145/00*
U.S. Cl. 260—543 H **4 Claims**

1. In a method of producing perchloromethylmercaptan in which carbon disulfide is reacted with chlorine until a mixture of said perchloromethylmercaptan with sulfur chlorides is formed, and said sulfur chlorides are separated from said perchloromethylmercaptan, the improvement which comprises holding said mixture in contact with a source of available oxygen selected from the group consisting of hydrogen peroxide, nitric acids, salts of permanganic acid and percarbonic acid, of peracids, and adducts of hydrogen peroxide with urea and sebacic acid in the presence of water at a temperature between 0° C. and 40° C. until said sulfur chlorides are substantially consumed by reaction with the oxygen of said source, and recovering the perchloromethylmercaptan purified thereby.

3,845,123
PHENOXYPROPANOLAMINE THERAPEUTIC AGENTS

David Alexander Cox, Canterbury, John Christopher Danilewicz, Sandwich, Allan Leslie Ham, Broadstairs, John Edward Glyn Kemp, Canterbury, and Michael Snarey, Sandwich, England, assignors to Pfizer Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 98,168, Dec. 14, 1970. This application Mar. 28, 1973, Ser. No. 345,726
Claims priority, application Great Britain, Dec. 17, 1969, 61,414/69; May 20, 1970, 24,360/70
Int. Cl. C07c *103/38*
U.S. Cl. 260—562 P **14 Claims**

1. 1 - (4 - acetamidophenoxy) - 3 - [2 - (4 - acetamidophenoxy)ethylamino]propan-2-ol.

3,845,124
METHYLTRICYCLO[4.4.0.$0^{3,8}$]DECAN-1-METHYLAMINE

Pierre Deslongchamps, Sherbrooke, Quebec, Canada, assignors to Ayerst, McKenna & Harrison, Limited, St. Laurent, Quebec, Canada

No Drawing. Continuation-in-part of application Ser. No. 743,623, July 10, 1968, now Patent No. 3,579,567. This application Jan. 27, 1969, Ser. No. 794,422
Int. Cl. C07c *87/40*
U.S. Cl. 260—563 P **3 Claims**

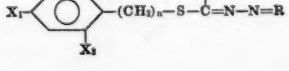
1. A compound selected from the group which consists of α-methyltricyclo[4.4.0.$0^{3,8}$]decan-1-methylamine, and non-toxic pharmaceutically acceptable acid addition salts thereof.

3,845,125
[DI-(ORTHO SUBSTITUTED)-PHENYL]ALKYLISOTHIOSEMICARBAZIDES AND DERIVATIVES

Robert C. Tweit, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed May 23, 1973, Ser. No. 363,302
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 E **10 Claims**

1. A member selected from the group consisting of compounds of the formula



wherein X_1 is hydrogen, halo, or lower alkyl; X_2 and X_3 are halo or lower alkyl; n=1–7; and R is H_2 or an alkylidene radical of the formula

wherein A_1 and A_2 are lower alkyl or phenyl, or A_1 and A_2 are taken together to form cycloalkylene radicals having 5–12 carbon atoms and salts thereof of pharmaceutically acceptable acids.

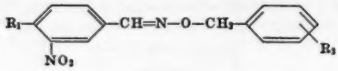
3,845,126

BENZALDOXIME DERIVATIVES

Raymond Giraudon, Val de Marne, and Jean Metivier, Seine, France, assignors to Rhone-Poulenc S.A.

No Drawing. Filed Sept. 25, 1967, Ser. No. 670,432
Claims priority, application France, Sept. 29, 1966, 78,184
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AE **7 Claims**

1. Benzaldoxime derivative of the formula:



wherein R_1 represents hydrogen or alkyl of 1 through 3 carbon atoms and

represents phenyl carrying one or two halogens.

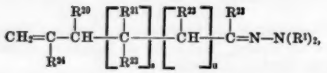
3,845,127

HYDRAZONES OF CARBONYL COMPOUNDS CONTAINING AN OMEGA ALKENE MOIETY

Abe Berger and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original application Aug. 16, 1971, Ser. No. 172,293, now Patent No. 3,700,711. Divided and this application June 28, 1972, Ser. No. 267,100
Int. Cl. C07c *109/14*
U.S. Cl. 260—566 B **1 Claim**

1. A compound of the formula,



where R^1 is an alkyl radical, R^{20}, R^{21}, R^{22}, R^{23} and R^{24} are independently selected from the group consisting of hydrogen, and alkyl radicals, said alkyl radicals containing up to 10 carbon atoms, u varies from 0 to 20 and s varies from 0 to 1.

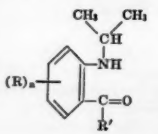
3,845,128

PREPARATION OF o-ISOPROPYLAMINOBENZOPHENONES

Max Denzer, Lake Parsippany, N.J., and Hans Ott, Pfeffingen, Basel-Land, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 679,201, Oct. 30, 1967. This application Aug. 5, 1970, Ser. No. 61,453
Int. Cl. C07c *97/10*
U.S. Cl. 260—570 AB **6 Claims**

1. A process for preparing a compound of the formula:

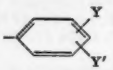


wherein

R represents halo, lower alkyl, lower alkoxy, nitro or trifluoromethyl;

n represents 0, 1 or 2; provided that when n is 2 R is either lower alkyl or lower alkoxy;

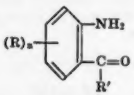
R′ represents phenyl or substituted phenyl of the formula



Y represents halo, hydroxy, lower alkyl, lower alkoxy or trifluoromethyl; and

Y′ represents hydrogen, halo, hydroxy, lower alkyl or lower alkoxy;

which consists essentially of reacting a compound of the formula



wherein R, R′ and n are as defined above, with at least a 25% stoichiometric excess of an isopropyl halide selected from the group consisting of isopropyl bromide or isopropyl iodide, at an elevated temperature of at least about 60° C. for a time of at least 10 hours, and isolating the resulting reaction product consisting essentially of an o-monoisopropylaminobenzophenone in yield of at least 70% based on the starting o-aminobenzophenone.

3,845,129

PURIFICATION OF p-AMINOPHENOL

Kenneth Cathro Reid, Midlothian, Scotland, assignor to Macfarlan Smith Limited, Edinburgh, Scotland

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,512
Claims priority, application Great Britain, Jan. 28, 1970, 4,021/70
Int. Cl. C07c *89/04*
U.S. Cl. 260—575 **8 Claims**

1. A process for the recovery in purified form of *p*-aminophenol prepared by catalytic reduction of nitrobenzene in acid medium whereby aniline and 4,4′-diaminodiphenyl ether are present as impurities, which process comprises contacting a solution of *p*-aminophenol and said impurities in an aqueous medium having a pH of 5.0 to 5.5 just short of that at which precipitation of *p*-aminophenol occurs and at which aniline and 4,4′-diaminodiphenyl ether are in the form of free bases with an extraction medium consisting essentially of a non-oxygenated solvent immiscible with water which selectively dissolves the impurities, separating the resulting phases with said *p*-aminophenol in solution in the aqueous phase and recovering *p*-aminophenol of improved purity from the aqueous phase.

3,845,130

PRODUCTION OF AMINES

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

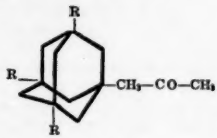
No Drawing. Original application Nov. 6, 1970, Ser. No. 87,599, now Patent No. 3,736,265. Divided and this application July 24, 1972, Ser. No. 274,552
Int. Cl. C07c *85/10*
U.S. Cl. 260—583 M **12 Claims**

1. In the low temperature hydrogenation of nitrated hydrocarbons to form corresponding amines having from 6 to 25 carbon atoms along with by-product water wherein said hydrocarbon and hydrogen are contacted with a catalyst composed of a group VIIB or VIII metal on carbon under hydrogenation conditions including reaction temperatures of from 100 to 450° F., the improvement which comprises carrying out said hydrogenation

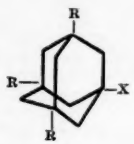
in the presence of said catalyst stabilized by heating said catalyst for at least one hour at a temperature of between 500 and 1200° F. in the presence of a non-oxidizing gas selected from the group consisting of nitrogen, mehtane, argon, helium, neon, ethane, propane, hydrogen and mixtures of hydrogen and light paraffins under a pressure of 0 to 1,000 p.s.i.g.

3,845,131
PROCESS FOR PREPARING ADAMANTANE DERIVATIVES
Stephen Slomo Szinai, Gainesville, Fla., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Mar. 23, 1972, Ser. No. 237,542
Claims priority, application Great Britain, Apr. 3, 1971, 8,607/71
Int. Cl. C07c *45/14, 49/43*
U.S. Cl. 260—586 R **2 Claims**

1. A process for the preparation of adamantylacetones of the formula

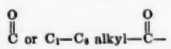


wherein R is hydrogen or methyl, which comprises reacting an adamantyl halide of the formula



wherein X is chlorine, bromine or iodine with an enol ester of the formula

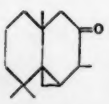
wherein Y is phenyl



in the presence of a Friedel-Crafts catalyst and an inert solvent and at a temperature in the range −70° C. to +40° C.

3,845,132
FRAGRANT POLYCYCLIC KETONES
Günther Ohloff, Bernex, Geneva, and Hugo Strickler, La Plaine, Geneva, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland
No Drawing. Filed Mar. 7, 1969, Ser. No. 805,353
Claims priority, application Switzerland, Mar. 8, 1968, 3,506/68; Mar. 4, 1969, 3,232/69
Int. Cl. C07c *49/36*
U.S. Cl. 260—586 R **3 Claims**

1. A composition of matter of the formula



I

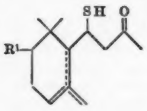
3,845,133
ALICYCLIC DIKETONES AND PROCESS FOR THEIR MANUFACTURE
Amnon Mordechai Cohen, Amersfoort, Netherlands, assignor to Polak's Frutal Works N.V., Amersfoort, Netherlands
No Drawing. Filed Nov. 3, 1971, Ser. No. 195,480
Claims priority, application Great Britain, Nov. 4, 1970, 52,389/70
Int. Cl. C07c *45/00, 49/46*
U.S. Cl. 260—586 R **7 Claims**

1. New compounds having the structure:

wherein R represents an alkyl radical having from 4 to 7 carbon atoms; and R′ represents an alkyl radical containing from 1 to 3 carbon atoms.

3,845,134
NOVEL MERCAPTODERIVATIVES OF IONONES AND IRONES
Daniel Helmlinger, Dubendorf, Dietmar Lamparsky, Wangen-Dubendorf, Peter Schudel, Grut, Trudi Sigg-Grütter, Winterthur, and Jost Wild, Zurich, Switzerland, assignors to Givaudan Corporation, Clifton, N.J.
No Drawing. Filed Nov. 26, 1971, Ser. No. 203,112
Claims priority, application Switzerland, Dec. 8, 1970, 18,130/70
Int. Cl. C07c *49/48*
U.S. Cl. 260—586 R **2 Claims**

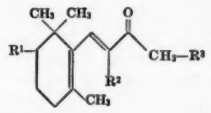
1. A compound having the general formula



wherein R^1 represents a hydrogen atom or the methyl group and wherein the broken lines denote a double bond which is present in one of the three indicated positions.

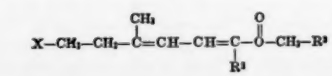
3,845,135
MANUFACTURE OF β-IONONES
Werner Hoffmann and Roman Rischer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed May 7, 1971, Ser. No. 141,348
Int. Cl. C07c *49/48*
U.S. Cl. 260—586 C **4 Claims**

1. A continuous process for the manufacture of β-ionone of formula I



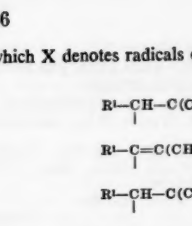
I,

in which R^1, R^2 and R^3 denote hydrogen or methyl, by cyclization of pseudo-ionones with sulfuric acid, wherein pseudo-ionones of formula II



II,

in which X denotes radicals of the formulae:



and R^1, and R^2 and R^3 have the meanings stated above, are cyclized and cyclization is carried out in the temperature range −30° to +20° C. and in the presence of mixtures of hydrocarbons which are liquids under the conditions of the reaction and which boil at temperatures below 200° C. at atmospheric pressure selected from the group consisting of methane, ethane, propane, butane, pentane, hexane, cyclohexane, benzene and xylene and lower aliphatic alcohols selected from the group consisting of alkanols of 1 to 6 carbon atoms, ethylene glycol and propylene glycol, the molar ratio of pseudo-ionone to hydrocarbon being about 1:1–17, that of pseudo-ionone to alcohol being 1:0.5–2 and that of pseudo-ionone to sulfuric acid being 1:7–12, the sulfuric acid used having a strength of from 90 to 98%.

3,845,136

SELECTIVE OXIDATION OF CARBALKOXY-1,3-INDANEDIONE SALTS

Alan E. Pierce, 3316 Brookview Road, Rockford, Ill. 61107

No Drawing. Filed May 3, 1971, Ser. No. 139,958
Int. Cl. C07c *49/82*
U.S. Cl. 260—590 **24 Claims**

1. In a process for selectively oxidizing the carbon atom in position 2 of a 1,3-indanedione, which is suspended or dissolved in an alkanoic organic acid containing about 1–4 carbon atoms, a dialkyl sulfoxide, an inert liquid, or mixtures thereof, comprising halogenating the 2 carbon atom of the 1,3-indanedione in the presence of Br_2, HBr, HCl, or mixtures thereof, and oxidizing it with a dialkyl sulfoxide; the improvement wherein the 1,3-indanedione is a 2-substituted alkali metal or alkaline earth metal salt of a 2-carbalkoxy-1,3-indanedione having about 1–10 carbon atoms in the carbalkoxy moiety thereof.

3,845,137

PROCESS FOR THE PRODUCTION OF POLY-FUNCTIONAL AROMATIC ALDEHYDES

Jules Magder, Princeton, N.J., assignor to Princeton Chemical Research Inc., Princeton, N.J.

No Drawing. Filed June 15, 1972, Ser. No. 263,146
Int. Cl. C07c *45/02*
U.S. Cl. 260—599 **8 Claims**

1. In a process for selectively preparing a poly-functional aldehyde by subjecting the corresponding alkyl benzene to a vapor phase oxidation in the presence of a supported catalyst mixture of oxides of tungsten and molybdenum wherein the tungsten metal to molybdenum metal mol ratio is 1:1 to 20:1, the improvement which comprises employing said supported catalyst in a form such that its initial surface area is at least about 2 square meters per gram and less than about 10 square meters per gram wherein said form is a mixture of oxides of tungsten and molybdenum and at least one-third metal or metal oxide, said third metal being selected from the group consisting of calcium, barium, titanium, zirconium, hafnium, thallium, niobium, zinc, tin and mixtures thereof.

3,845,138

PROCESS FOR THE REDUCTION OF TEREPHTHALALDEHYDE TO p-HYDROXYMETHYLBENZALDEHYDE

Andrew P. Dunlop, Riverside, and Edward Sherman and Joseph P. Wuskell, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,549
Int. Cl. C07c *45/00*
U.S. Cl. 260—600 **9 Claims**

1. A catalytic hydrogenation process for obtaining *p*-hydroxymethylbenzaldehyde, substantially free of *p*-xylylene glycol, *p*-methylbenzaldehyde and *p*-xylene, by reducing terephthalaldehyde, the process comprising concurrently contacting hydrogen and terephthalaldehyde in an inert solvent in the presence of a catalyst, which is a metal of the eighth periodic group, and a base selected from the group consisting of inorganic bases having a pK greater than 5.0 and amines; wherein the contacting is at a temperature from 0 to 100° C. and a hydrogen pressure from 1 to 10 atmospheres; and discontinuing said contacting when a stoichiometric amount of hydrogen necessary for the reaction has reacted wherein the said base is present in an amount from 0.10 meq. to 0.50 meq. per mg. of palladium.

3,845,139

METHOD FOR PREPARING HYDROXY-TERMINATED COPOLYMERS OF BUTADIENE AND ACRYLATE

Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed July 31, 1969, Ser. No. 849,255
Int. Cl. C07d *107/02*
U.S. Cl. 260—606.5 B **2 Claims**

1. A method of polymerizing butadiene and carboranyl methyl acrylate to yield hydroxyl terminated copolymers having a molecular weight range from about 2600 to about 3700, an hydroxy-end group content in the range from about 0.60 weight percent to about 1.36 weight percent, and a boron content in the range of about 2 to about 20.4 weight percent, said method comprising reacting carboranyl methyl acrylate and a suitable polymerization initiator in an inert organic solvent with butadiene at a reaction temperature and for a reaction time period sufficient for said reaction to take place after which solvent removal is effected and said copolymers are dried at a suitable drying temperature while under reduced pressure, said butadiene to carboranyl methyl acrylate being in weight ratio of about 1:5 to about 19:1, said initiator being selected from azo-bis-(2-methyl-5-hydroxy-valeronitrile), azo-bis-(2-methyl - 3 - hydroxy-propionitrile), and azo-bis-(hydroxyethyl-2-methyl propionate), said inert organic solvent being selected from dioxane, toluene, and dimethyl formamide, said reaction temperature being in the range of about 60° C. to about 80° C., said reaction time being from about 24 hours to about 120 hours, said drying is accomplished at a suitable temperature in the range of about 70° C. to about 75° C., and said reduced pressure is in the range of about 1 millimeter.

3,845,140

OXIDATION OF SECONDARY AND TERTIARY ALKYL AROMATIC HYDROCARBONS

Arthur M. Brownstein, Cherry Hill, N.J., and David L. Kerr, Wilmington, Del., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Continuation of application Ser. No. 709,786, Mar. 1, 1968. This application Mar. 10, 1970, Ser. No. 17,048
Int. Cl. C07c *73/08*
U.S. Cl. 260—610 B **10 Claims**

1. In a process for the oxidation of secondary and tertiary alkyl aromatic hydrocarbons with oxygen or an

oxygen-containing gas at temperatures of from 80° to 130° C. in the presence of a catalyst to produce the corresponding hydroperoxide compounds, the imporvement which comprises oxidizing said alkyl aromatic hydrocarbons having the formula

in which R is a lower alkyl group having from one to seven carbon atoms; R_1 is hydrogen or a lower alkyl group having from one to six carbon atoms; R and R_1, taken together, form a cycloalkyl ring having from four to seven carbon atoms; and Ar is phenyl or naphthyl, in the presence of a catalyst comprising a cuprous halide selected from the group consisting of cuprous chloride, cuprous bromide, and cuprous iodide, and an aromatic heterocyclic amine selected from the group consisting of pyridine, quinoline, isoquinoline, triazine and pyrazine, wherein the ratio of cuprous halide to amine is in the range of about 1 to 100 parts by weight of said halide for each 100 parts of amine.

3,845,141

CYCLODODECYL ETHERS

Peter Naegeli, Unter-Ehrendingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,570
Claims priority, application Switzerland, Nov. 3, 1970, 16,263/70
Int. Cl. C07c *43/18*
U.S. Cl. 260—611 R **1 Claim**

1. 1-Methylcyclododecyl methyl ether.

3,845,142

PROCESS FOR PRODUCING POLYCYCLIC ALKYLPHENOLS

Yakov Abramovich Gurvich, Sretensky bulvar 6, kv. 61; Alexandr Afroimovich Grinberg, Khalturinskaya ulitsa 10, korpus 2, kv. 30; Evgeny Lvovich Styskin, Khalturinskaya ulitsa 10, korpus 2, kv. 48; Simona Tevievna Kumok, Kutuzovsky prospekt 41, korpus 1, kv. 32; Valerian Mikhailovich Sobolev, Naberezhnaya Maxima Gorkogo 12, kv. 62; Eduard Sergeevich Sorokin, ulitsa Boitsova 16, korpus 1, kv. 62; and Irina Sergeevna Shelkova, Rostovsky pereulok 2/14, kv. 23, all of Moscow, U.S.S.R.; and Alexandr Grigorievich Liakumovich, Prospekt Lenina 23, kv. 4; Jury Ivanovich Michurov, ulitsa Khudaiberdova 125, kv. 36; and Grigory Iosifovich Rutman, ulitsa Revoljutsionnaya 7, kv. 6, all of Sterlitamak, U.S.S.R.

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,826
Int. Cl. C07c *37/00*
U.S. Cl. 260—619 B **7 Claims**

1. A process for producing polycyclic alkylphenols, comprising condensation of 2,6-di-tert.butyl-4-methoxymethylphenol with a methylsubstituted benzene having from 1 to 4 methyl groups in an inert organic solvent medium in the presence of an acidic catalyst selected from the group consisting of sulfuric acid, oxalic acid, perchloric acid, toluenesulfonic acid, and zinc chloride, at a temperature of from −60° to +140° C. and at a ratio of the 2,6-di-tert.butyl-4-methoxymethylphenol to methyl-substituted benzene of 0.8–1.7 of the stoichiometric value, followed by the isolation of the desired product.

3,845,143

PROCESS FOR ALKYLATING PHENOLS

John C. Wollensak, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed May 13, 1971, Ser. No. 143,239
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 C **11 Claims**

1. A process for alkylating a phenol having at least one replaceable nuclear hydrogen atom in an ortho or para position, said phenol being selected from the group consisting of phenol and alkyl-substituted phenols, said process comprising reacting said phenol with a primary or secondary C_{1-20} alkyl amine in contact with a hydrogenation-dehydrogenation catalyst, said catalyst containing a catalytic metal selected from the group consisting of palladium, rhodium, platinum, nickel, copper, chromium, cobalt, molybdenum, vanadium, zinc, uranium and tungsten, at a temperature of from about 125–500° C., said C_{1-20} alkyl amine having at least one hydrogen atom bonded to an alpha alkyl carbon atom and at least one hydrogen atom bonded to the amine nitrogen atom.

3,845,144

CONTINUOUS PRODUCTION OF PROPYLENE CHLOROHYDRIN

Ernst Bartholome, Heidelberg, Waldemar Koehler, Ludwigshafen, Guenter Stoeckelmann, Bobenheim-Roxheim, Gerhard Schulz, Ludwigshafen, Otto Nagel, Hambach, Walter Goetze, Ludwigshafen, Werner Kasper, Frankenthal, Erich Dreher, Ludwigshafen, and Roland Dahlinger, Neckargemuend, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 31, 1971, Ser. No. 130,000
Int. Cl. C07c *31/34*
U.S. Cl. 260—634 **10 Claims**

1. In a process for the continuous production of an aqueous solution of propylene chlorohydrin by reacting propylene with an aqueous chlorine solution, recycling some of the reaction solution and adding make-up water, the improvement which comprises loading the recycled solution with chlorine to such an extent that the limit of solubility of the chlorine is not exceeded, by means of a two fluid nozzle, metering the propylene to be reacted into the chlorine-laden solution at a pressure of from 2 to 20 atmospheres absolute and at a temperature of from 10° to 80° C., by means of a two fluid nozzle, allowing the reaction mixture to react in one or more parallel tubes with turbulent flow in the same pressure range with a residence time of not more than ten seconds, releasing the pressure, withdrawing some of the propylene chlorohydrin solution as product and recycling the remainder of the propylene chlorohydrin solution, wherein at the point of incorporation of the chlorine as well as at the point of incorporation of propylene the recycle liquid is introduced at a velocity of from 2 to 100 meters per second through said two-fluid nozzles and then into a mixing zone extending in the direction of flow whose diameter is from 1.5 to 50 times the mean outlet diameter of the liquid nozzles and whose length is from 3 to 30 times its hydraulic diameter, and allowing the mixture to complete the reaction in one or more parallel reaction tubes.

3,845,145

PREPARATION OF CHLOROHYDRINS

John A. Wojtowicz, Cheshire, Conn., Milton Lapkin, Barrington, R.I., and Mohindar S. Puar, East Brunswick, N.J., assignors to Olin Corporation

No Drawing. Continuation-in-part of applications Ser. No. 792,761, Jan. 21, 1969, now Patent No. 3,578,400, and Ser. No. 852,907, Aug. 25, 1969, now abandoned. This application July 28, 1972, Ser. No. 276,015
Int. Cl. C07c *31/34, 35/00*
U.S. Cl. 260—634 **10 Claims**

1. In a process for preparing chlorohydrins by reacting hypochlorous acid with an unsaturated organic compound having from 2 to about 20 carbon atoms selected from the group consisting of olefins, cyclic olefins, monohydroxy substituted olefins and olefinic halides to form a reaction mixture containing the resulting chlorohydrins

and separating said chlorohydrins from said reaction mixture, the improvement which comprises:

(a) reacting said unsaturated organic compound at temperatures of −25 to +60° C.,

(b) with a solution of hypochlorous acid dissolved in an organic solvent selected from the group consisting of,

(1) lower alkyl ketones,

(2) lower alkyl cyanides,

(3) lower alkyl esters of lower alkanoic acids, wherein each of said lower alkyls contain from 1 to 5 carbon atoms,

(i) said solution of hypochlorous acid being essentially free of chloride ions and being obtained by extracting hypochlorous acid from a hypochlorous acid reaction mixture with said organic solvent,

(c) said solution of hypochlorous acid containing from about 0.5 to 50 percent by weight of hypochlorous acid, and

(d) said reaction mixture containing the resulting chlorohydrins containing from 0.1 to 25 percent by weight of water.

3,845,146

BROMINATION WITH BROMINE CHLORIDE UNDER PRESSURE

Donald E. Moore, Coleman, and Jack F. Mills and John A. Schneider, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 864,219, Oct. 6, 1969. This application Mar. 30, 1972, Ser. No. 240,297

Int. Cl. C07c *25/04*

U.S. Cl. 260—650 R **8 Claims**

1. In the process for polybrominating the aromatic nucleus of benzene, lower alkyl benzene, phenol, biphenyl or diphenyl oxide to an extent sufficient to render a product containing five or six bromine atoms on each aromatic ring which comprises reacting by contacting at a temperature of from—10° to 150° C. the aromatic nucleus with bromine chloride in an amount at least stoichiometric to give the desired product in the presence of iron or a Friedel-Crafts catalyst, the improvement which comprises carrying out the reaction in a closed reactor under a pressure of 10 to 200 p.s.i.g. during the course of the reaction.

3,845,147

STABILIZATION OF 1,1,1-TRICHLOROETHANE

Hermann Richtzenhain, Cologne-Suelz, and Rudolf Stephen Ranzel, Upper Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft Patentabteilung, Troisdorf, Bezirk-Cologne, Germany

No Drawing. Application June 29, 1970, Ser. No. 60,173, now Patent No. 3,787,509, which is a division of application Ser. No. 805,923, Jan. 5, 1969, now Patent No. 3,590,088, which is a division of application Ser. No. 609,681, Jan. 16, 1967, now Patent No. 3,445,532, which in turn is a continuation of abandoned application Ser. No. 316,772, Oct. 16, 1963. Divided and this application Apr. 20, 1972, Ser. No. 246,086

Claims priority, application Germany, Oct. 18, 1962, D 40,087

Int. Cl. C07c *17/42, 19/02*

U.S. Cl. 260—652.5 R **1 Claim**

1. A stabilized composition consisting essentially of 1,1,1-trichloroethane and 0.5 weight percent of a mixture of acetonitrile and ethylene diamine, said acetonitrile and ethylene diamine present in equivalent amounts.

3,845,148

PROCESS FOR THE MANUFACTURE OF CARBON TETRACHLORIDE

Wilhelm Riemenschneider, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,715

Claims priority, application Germany, Oct. 9, 1971, P 21 50 400.7

Int. Cl. C07c *17/00, 19/06*

U.S. Cl. 260—658 R **3 Claims**

1. In a process for the manufacture of carbon tetrachloride by reacting chlorine with an organic compound selected from the group consisting of aliphatic hydrocarbons containing at least 2 carbon atoms, cyclo-aliphatic hydrocarbons, aromatic hydrocarbons, chlorine substitution products thereof or mixtures thereof in the absence of a catalyst under a pressure ranging from 50 to 800 atmospheres and a temperature of between 0 and 400° C. in a prereaction zone and between 400 and 800° C. in a main reaction zone, the improvement which comprises heating the prereaction zone periodically to a temperature of from 400 to 800° C. while considerably reducing or interrupting entirely the feed of organic compound during the periods of heating and cooling.

3,845,149

ISOMERIZATION OF ISOPROPYL NAPHTHALENE

Siegfried Pietzsch and Rudolf Wirtz, Kelkheim, Taunus, and Georg Schaeffer, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 2, 1973, Ser. No. 356,406

Claims priority, application Germany, May 6, 1972, P 22 22 342.3

Int. Cl. C07c *5/28, 15/24*

U.S. Cl. 260—668 A **5 Claims**

1. A process for the isomerization of α-isopropylnaphthalene to β-isopropyl naphthalene with an aluminium chloride catayst which comprises using as a catalyst aluminium chloride in amounts of 0.05 to 0.8% by weight or ethyl aluminium dichloride in amounts of 0.5 to 1.5% by weight or a mixture thereof, each calculated on the total quantity of the initial alkylated naphthalenes, the portion of the β-isomeric mono - isopropyl naphthalene being at least 92%, calculated on the total mono-isomer portion and the total portion of the mono-isopropyl-naphthalene exceeding 70% by weight, calculated on the total amount of alkylated naphthalenes, at a temperature of from 40 to 200° C.

3,845,150

AROMATIZATION OF HYDROCARBONS

Tsoung-Yuan Yan, Trenton, and John C. Zahner, Princeton, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Aug. 24, 1973, Ser. No. 391,445

Int. Cl. C07c *3/02*

U.S. Cl. 260—673.5 **5 Claims**

1. In the process of aromatizing hydrocarbons by contacting a feed comprising such with a ZSM–5 type of catalyst at about 650 to 1500° F. and a space velocity of about 0.1 to 15 WHSV in the absence of added hydrogen; the improvement, whereby carrying out such process in a substantially heat balanced condition, which comprises utilizing as said hydrocarbon feed a mixture of

saturated and unsaturated fractions so proportioned that the feed contains about 20 to 65% reactive saturates and about 20 to 50% by weight olefins.

3,845,151

ADSORPTIVE SEPARATION OF PINENE ISOMERS WITH ADSORBENTS CONTAINING AN AROMATIC HYDROCARBON SUBSTRATE

James W. Priegnitz, Elgin, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Nov. 1, 1973, Ser. No. 411,977
Int. Cl. C01b *33/28*; C07c *7/12*, *13/00*; C09f *3/02*
U.S. Cl. 260—675.5 23 Claims

1. A process for separating pinene isomers from a feed mixture containing pinene isomers which process comprises contacting said mixture with a crystalline aluminosilicate adsorbent selected from the group consisting of type X structured and type Y structured zeolites containing one or more selected cations at the exchangeable cationic sites within said zeolite and containing an aromatic hydrocarbon substrate selected from the group consisting of benzene and benzene homologues having a boiling point less than that of the pinene isomers, thereby selectively adsorbing, at adsorption conditions, said isomer from said mixture and thereafter recovering the selectively adsorbed isomer.

3,845,152

SELECTIVE ISOMERIZATION OF POLYENES HAVING TERMINAL CONJUGATED UNSATURATION

James Michael McKenna, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,323
Int. Cl. C07c *5/24*
U.S. Cl. 260—677 R 12 Claims

1. A process for the selective isomerization of a terminally conjugated polyene having a carbon chain of at least six carbon atoms, whereby terminal conjugated unsaturation is shifted to an internal position, the process comprising contacting the polyene with a catalyst consisting essentially of a hydrogen-exposed mixture of

(a) a cobalt (II) salt,

(b) at least one of Group IA cyanide and a Group IIA cyanide, with the proviso that the ratio of cyanide ion gram-equivalents to cobalt gram-atoms is at least 3 to 1;

the process being carried out in the presence of a solvent containing 0–10% water and at a temperature of about 25–150° C.

3,845,153

PROCESS OF DEHYDROGENATION

Louis J. Croce, Seabrook, Tex., and Laimonis Bajars, Princeton, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Continuation of abandoned application Ser. No. 780,228, Nov. 29, 1968, which is a continuation-in-part of application Ser. No. 459,878, May 28, 1965. This application Oct. 5, 1971, Ser. No. 186,805
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E 2 Claims

1. A process for the oxidative dehydrogenation of aliphatic hydrocarbons of 4 to 5 carbon atoms having a straight chain of at least 4 carbon atoms which comprises contacting said aliphatc hydrocarbon with a catalyst consisting essentially of chromium ferrite in the presence of 0.2 to 5.0 mol of oxygen per mol of hydrocarbon at temperatures in the range of 300 to 750° C. and wherein said ferrite has been formed by reacting (1) a member selected from the group consisting of iron oxide or precursors of iron oxide under the conditions of reaction to form said ferrite composition, and mixtures thereof with (2) a member selected from the group consisting of chromium oxide or precursors of chromium oxide under the conditions of reaction to form said ferrite composition, and mixtures thereof at a reaction temperature of no greater than 550° C., the total number of atoms of the said chromium being from .35 to 0.6 per atom of said iron in the catalyst.

3,845,154

CONTINUOUS PROCESS FOR RECYCLING SOLVENT AND RHODIUM CATALYST IN PRODUCING 1,4-HEXADIENE

William John Keller, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 25, 1973, Ser. No. 409,597
Int. Cl. C07c *11/12*
U.S. Cl. 260—680 B 9 Claims

1. A continuous process for recycling solvent and catalyst during the preparation of 1,4-hexadiene which comprises (a) co-reacting ethylene and 1,3-butadiene in the presence of a rhodium catalyst in a one-phase liquid reaction zone containing a water-soluble poly(oxyethylene)ether solvent having a molecular weight of at least 134, at a temperature of from 25–150° C., and a pressure of from atmospheric to 2000 p.s.i.g., (b) passing the resulting liquid effluent from the reaction zone to a flasher operated at subatmospheric pressure to remove 1,4-hexadiene, (c) recirculating a major portion of residual liquid effluent from the flasher to the reaction zone, while, at the same time, circulating the balance of residual liquid effluent constituting about 0.25–10% by weight of the flasher effluent and containing poly(oxyethylene)ether solvent, rhodium catalyst and high-boiling hydrocarbon by-products having C_8–C_{12} fractions to a vessel, (d) mixing said balance with at least about 30% by volume water in order to form an organic phase containing said high-boiling hydrocarbons and rhodium catalyst and an aqueous phase containing poly(oxyethylene)ether solvent and rhodium catalyst, (e) separating the aqueous phase from the organic phase, and (f) circulating the poly(oxyethylene)ether solvent and rhodium catalyst from the aqueous phase to the reaction zone for reuse in the process.

3,845,155

ALKYLATING OLEFINS OVER ETA-ALUMINA/ZIRCONIA CATALYST

Louis F. Heckelsberg, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 12, 1973, Ser. No. 332,001
Int. Cl. C07c *1/20*
U.S. Cl. 260—682 9 Claims

1. A process for alkylating an olefin feed selected from monoolefinic and diolefinic hydrocarbons containing from 3 to 20 carbon atoms per molecule, which comprises reacting under suitable reaction conditions said olefin feed with at least one dialkyl ether containing from 1 to 6 carbon atoms per alkyl group, in contact with a catalyst consisting essentially of eta-alumina and zirconia, the zirconia being present in an amount in the range of about 0.1 to about 20 weight percent of the catalyst, to produce an olefin product having at least one more carbon atom than said olefin feed, said reaction conditions comprising an at least substantial absence of free oxygen.

3,845,156

PROCESSES FOR DEHYDROGENATION OF ORGANIC COMPOUNDS

Floyd E. Farha, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,399
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E 3 Claims

1. In a process for the oxidative dehydrogenation of a dehydrogenatable hydrocarbon feedstock having 3 to 10

carbon atoms per molecule in the presence of an oxidative dehydrogenation catalyst consisting essentially of Li, Sn, P and O, the improvement which comprises effecting said dehydrogenation in the presence of about 1 to about 20,000 p.pm., based on weight of feedstock, of carbon disulfide.

3,845,157

HYDROCARBON LUBRICANTS FROM OLEFIN POLYMERS

Charles Woo, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,487

Int. Cl. C07c *3/20, 5/02*

U.S. Cl. 260—683.9 **7 Claims**

1. A process for the production of a synthetic hydrocarbon lubricating oil which comprises the catalytic cracking of a copolymer of ethylene and an alpha olefin of from 3 to 10 carbon atoms, of 5,000 to 900,000 viscosity average molecular weight under conditions reducing the viscosity of said polymer to a viscosity within the range of about 30 to 70 SUS measured at 210° F., said cracking being conducted in the presence of a catalyst comprising a rare-earth-promoted crystalline alumino-silicate zeolite in a silica-alumina matrix.

3,845,158

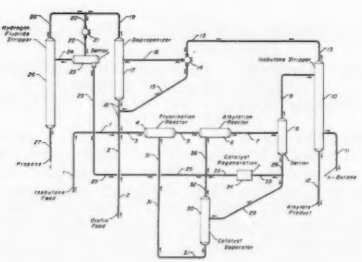
ALKYLATION PROCESS WITH FLUORINATION STEP UTILIZING RECYCLED HF CATALYST

Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of abandoned application Ser. No. 190,020, Oct. 18, 1971. This application June 21, 1972, Ser. No. 265,091

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.49 **4 Claims**



1. A process for producing hydrocarbon alkylate which comprises

(a) introducing to a fluorination zone an isoparaffinic reactant and an olefinic reactant in a mole ratio of isoparaffin to olefin of about 0.5:1 to about 10:1;

(b) recycling to said zone a hydrogen fluoride catalyst containing from about 40 wt. percent to about 60 wt. percent of organic diluent consisting essentially of hydrocarbon polymer having a molecular weight of from about 200 to about 500, said polymer being soluble in hydrogen fluoride;

(c) reacting hydrogen fluoride with the olefinic reactant in said zone to form alkyl fluoride;

(d) reacting the effluent from said fluorination zone with hydrogen fluoride alkylation catalyst of at least 85 wt. percent titratable acidity to form an alkylate; and

(e) recovering said alkylate from the effluent of step (d).

3,845,159

TETRAPOLYMER OF ETHYLENE/C_3–C_{12} ALPHA-MONOOLEFIN/MALEIC ANHYDRIDE/C_6–C_{22} NONCONJUGATED DIENE

Tsuneichi Takeshita, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Apr. 15, 1971, Ser. No. 134,448, now abandoned. Divided and this application Mar. 29, 1973, Ser. No. 346,162

Int. Cl. C08f *1/56, 15/40*

U.S. Cl. 260—785 BB **8 Claims**

1. An elastomeric sulfur-curable tetrapolymer of about 20–75 weight percent of ethylene units, about 15–80 weight percent of C_3–C_{12} alpha-monoolefin units, about 1–20 weight percent of units of a C_6–C_{22} nonconjugated diene having only one polymerizable double bond, the balance being maleic anhydride units, said tetrapolymer exhibiting in the infrared absorption spectrum anhydride, carboxyl and carboxylate bands at 5.6μ, 5.8μ, and 6.3μ, respectively.

3,845,160

PROCESS FOR THE COPOLYMERIZATION OF TRIOXANE WITH C—O—C GROUPS-CONTAINING COMPOUNDS

Erich Bäder, Hanau, and Herbert Amann, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 109,025, Jan. 25, 1971. This application Jan. 15, 1973, Ser. No. 323,928

Claims priority, application Germany, Jan. 26, 1970, P 20 03 270.6

Int. Cl. C08g *1/16*

U.S. Cl. 260—823 **11 Claims**

1. A process for producing polyoxymethylenes interspersed with oxyalkylene units by the bulk copolymerization of 1,3,5-trioxane and at least one compound selected from the group consisting of cyclic aliphatic and cyclic araliphatic ethers, cyclic aliphatic acetals, cyclic aliphatic esters, polydioxolane and condensation products of diols and formaldehyde that are copolymerizable with 1,3,5-trioxane, which process comprises (a) mixing together the 1,3,5-trioxane and the compound that is copolymerizable therewith together with a cationic initiator of the group consisting of perchloric acid, derivatives of perchloric acid, stannic tetrachloride, fluoro compounds of antimony, fluoro compounds of arsenic and complexes derived from these fluoro compounds, (b) placing the mixture into an open reaction vessel of such dimensions that the ratio of the area of the surface of the mixture to its weight is maintained between 0.04 and 2 square centimeters per gram, (c) thereby, after an induction period, producing polymerization of the mixture as a result of the heat of reaction and the heat of crystallization of the polymer crystals that form, without external cooling or application of other means for removing the heat thereby generated, the temperature of the mixture thus increasing to at least 110° C., the concentration of the said cationic initiator being between 0.01 and 2 mols per million mols of trioxane and being sufficient to produce an induction period between 2 and 300 seconds, and the unreacted monomeric or other low molecular compounds being evaporated from the mixture during its polymerization as a result of the said temperature increase.

3,845,161
CURABLE COMPOSITIONS

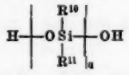
Melvin D. Beers, Ballston Lake, N.Y., assignor to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 267,192, June 28, 1972, which is a continuation-in-part of application Ser. No. 153,812, June 16, 1971, both now abandoned. This application Sept. 26, 1973, Ser. No. 400,895

Int. Cl. C08g 47/02

U.S. Cl. 260—825 10 Claims

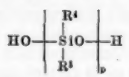
1. A fluid composition stable under substantially anhydrous conditions and curable to an elastic solid in the presence of moisture consisting essentially of a base silanol chain-stopped polydiorganosiloxane having the formula,



where R^{10} and R^{11} are independently selected from the class consisting of hydrocarbyl, halohydrocarbyl and cyano lower alkyl and q varies from 300 to 5,260, a silane represented by the formula:

$$R_mSi(OR^1)_{4-m}$$

0.01 to 10 parts based on 100 parts of the base polydiorganosiloxane of a titanium chelate catalyst and 0.3 to 20 parts based on 100 parts of the polydiorganosiloxane of a viscosity depressant of the formula:



wherein R is a radical having not more than about 8 carbon atoms selected from the group consisting of hydrocarbyl, halohydrocarbyl, and cyano lower alkyl, R^1 is a radical not having not more than about 8 carbon atoms selected from the group consisting of hydrocarbyl, halohydrocarbyl and cyano lower alkyl, R^4 and R^5 are each organic radicals of not more than 8 carbon atoms selected from the group consisting of hydrocarbyl, halohydrocarbyl and cyano lower alkyl, m has a value of 0 to 3 and an average value based upon the total amount of silane in the composition of 0 to 1.99, and p has a value of 2 to 46.

3,845,162
STORAGE-STABLE MOULDING AND COATING COMPOSITIONS

Bernhard Hess and Karl Raichle, Kapellen, near Moers, Hans Rudolph, Krefeld-Bockum, and Karl Fuhr, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 273,507, July 20, 1972. This application Aug. 15, 1973, Ser. No. 388,483

Claims priority, application Germany, July 22, 1971, P 21 36 633.6

Int. Cl. C08f 43/02, 45/58

U.S. Cl. 260—863 13 Claims

1. A curable storage-stable composition comprising a mixture of

(A) an essentially linear polyester obtained by condensation of a polyol with an acid component containing an α,β-unsaturated dicarboxylic acid or its ester or its anhydride or a mixture thereof, said polyester containing a conventional stabilizer;

(B) a vinyl monomer copolymerizable with the polyester;

(C) an α-hydroxy ketone or a benzoin ether of a primary alcohol; or a mixture thereof and;

(D) at least one at least dibasic acid of phosphorus having P—OH— acidity or partial esters thereof containing at least two (P)—OH groups.

3,845,163
BLENDS OF POLYAMIDES AND IONIC COPOLYMER

Lee Ellis Murch, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 24, 1966, Ser. No. 522,374

Int. Cl. C08g 41/04

U.S. Cl. 260—857 L 3 Claims

3. A thermoplastic blend for improving the weld-line toughness of an article having a weld line and molded from said blend consisting essentially of an intimate mixture of from 60 to 85% by weight of a polyamide and, complementally, from 15 to 40% by weight of a random ionic copolymer of units derived from an α-olefin of the formula $RCH=CH_2$ wherein R is H or alkyl having from 1 to 8 carbon atoms and from 1 to 8 mole percent of units derived from an α,β-ethylenically unsaturated carboxylic acid, at least 10% of the acid groups of said acid being neutralized by metal ions.

3,845,164
VINYLCHLORIDE COMPOSITION CONTAINING A BUTADIENE BASED LATEX COMPONENT AND A STYRENE BASED GRAFT COMPONENT

Takeshi Goto and Eiji Sakaoka, Tokyo, Japan, assignors to Denki Kagaku Kogyo K.K., Tokyo, Japan

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,300

Int. Cl. C08f 15/00, 19/00

U.S. Cl. 260—876 R 6 Claims

1. A mixed resin composition consisting essentially of:

(A) 5–25 parts by weight of a graft copolymer formed from

(1) a latex of a copolymer of 0.1–1 weight percent of a divinyl compound, 55–85 weight percent of 1,3-butadiene, 5–30 weight percent of styrene, and 3–40 weight percent of methyl methacrylate which is characterized by a swelling index of 5–25, a benzene insoluble content of greater than 90% and an average particle diameter of 0.05–0.2μ, which has grafted thereto,

(2) a copolymer of 3–46 weight percent of methyl methacrylate, 51–90 weight percent of styrene and 3–9 weight percent of acrylonitrile, and

(B) 95–75 parts by weight of polyvinylchloride or a copolymer containing more than 90% vinyl chloride units selected from the group consisting of vinyl chloride-vinyl acetate, vinyl chloride-ethylene and vinyl chlorine-propylene.

3,845,165
SURFACE-COATING COMPOSITIONS CONTAINING [(SUBSTITUTED INDAZOLYL)-N¹-METHYL]CARBAMATES

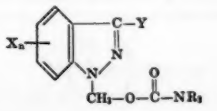
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Application Nov. 29, 1972, Ser. No. 310,670, which is a continuation-in-part of applications Ser. No. 141,999, May 10, 1971, now Patent No. 3,741,979, and Ser. No. 247,084, Apr. 24, 1972. Divided and this application Feb. 5, 1974, Ser. No. 439,720

Int. Cl. C09d 5/14

U.S. Cl. 260—89.1 9 Claims

1. A surface-coating composition that comprises (a) an organic, water-insoluble, film-forming, resinous binder and (b) a biocidally-effective amount of a biocidal compound having the structural formula



wherein X represents halogen, nitro, amino, acetamino, or (halobenzylidene)amino; *n* represents an integer in the range of 0 to 3; each R represents hydrogen, alkyl having 1 to 4 carbon atoms, phenyl, halophenyl, or nitrophenyl; when *n* is 0, Y represents halogen; and, when *n* is 1 to 3, Y represents hydrogen or halogen.

3,845,166

CURABLE COMPOSITION COMPRISING POLYVINYL CHLORIDE, CHLORINATED POLYOLEFIN AND AN ETHYLENE POLYMER, AND THE CURED PRODUCT THEREOF

Joseph Ellwood Betts, Westport, and Stanton Curry Martens, New Haven, Conn., assignors to General Electric Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 131,395, Apr. 5, 1971, which is a continuation-in-part of application Ser. No. 693,076, Dec. 26, 1967, both now abandoned. This application July 5, 1973, Ser. No. 376,722

Int. Cl. C08f *29/24*

U.S. Cl. 260—897 C **13 Claims**

1. A flexible, thermosetting curable polymeric composition having improved physical and electrical properties, comprising a blend of polymers of polyvinyl chloride and chlorinated polyolefin within the ration of 45:55 to 55:45 parts by weight and about 3 to 10 percent by weight of the total weight of the polyvinyl chloride and chlorinated polyethylene polymer content of an ethylene polymer containing not less than about 70 percent by weight ethylene, said polymeric blend containing at least about 25 percent by weight thereof of chlorine, a stabilizer for said chlorinated polymers, and at least about 2 parts up to about 8 parts by weight of a peroxide cross-linking curing agent per 10 parts of the polyvinyl chloride and chlorinated polyethylene polymer blend, said polymeric composition being cross-link curable to a thermoset composition which is flexible at low temperatures, mechanically tough, resistant to flame, moisture, chemicals, solvents and hot oil, and has stable electrical properties at elevated temperatures.

3,845,167

POLYMERIC PHOSPHAZENES AND PROCESS FOR MAKING SAME

Borivoj Richard Franko-Filipasic, Morrisville, Pa., and Edward F. Orwoll, Baltimore, and Vithal C. Patel, Glen Burnie, Md., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Feb. 11, 1972, Ser. No. 225,621

Int. Cl. C08b *21/20*; C07d *105/04*

U.S. Cl. 260—927 N **7 Claims**

1. A process for the preparation of substantially water-insoluble liquid polymeric phosphazenes having a viscosity of 100 to 50,000 centipoises at 25° C. comprising reacting a phosphonitrilate having the general formula:

representing both cyclic and linear oligomers, in which *n* is at least 3 for cyclic oligomers and wherein X and Y represent the same or different -OR groups wherein R is an alkyl or alkenyl radical having 1 to 6 carbon atoms, with an acid halide of a phosphorus acid selected from the group consisting of phosphonitrilic halide oligomers having the structure:

representing both cyclic and linear oligomers, in which n is at least 3 for cyclic oligomers and X′ is chlorine or bromine, POX_3', PX_3' and PSX_3' in which X′ is chlorine or bromine at a temperature of 50° to 200° C.

3,845,168

TRIMETHYLOL PROPANE PHOSPHITE

Alvin Guttag, Bethesda, Md., assignor to Weston Chemical Corporation, New York, N.Y.

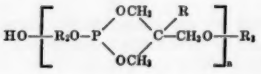
No Drawing. Application Jan. 16, 1970, Ser. No. 3,501, which is a continuation-in-part of application Ser. No. 758,701, Sept. 10, 1968, now abandoned. Divided and this application Dec. 13, 1971, Ser. No. 207,694

Int. Cl. C07f *9/08*

U.S. Cl. 260—927 R **11 Claims**

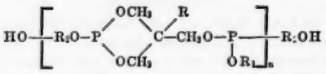
1. Phosphites of the formulae

(1)

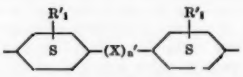


and

(2)



and the position isomers thereof and where R is hydrogen or alkyl of up to 20 carbon atoms, R_1 is phenyl, naphthyl, alkyl of up to 20 carbon atoms, halo phenyl, halo naphthyl, halo alkyl of up to 20 carbon atoms, alkyl phenyl of up to 20 carbon atoms in the alkyl group, alkyl naphthyl of up to 20 carbon atoms in the alkyl group, alkenyl of 3 to 18 carbon atoms, halo alkenyl of 3 to 18 carbon atoms, or benzyl, and where the halo group is Cl, Br or I, R_2 is a hydrogenated dihydric phenol moiety having the formula



wherein R'_1 is hydrogen or alkyl, X is O, S, SO_2 or

where R'_2 and R'_3 are hydrogen, lower alkyl or phenyl and *n′* is zero or 1, R_3 is H or R_1 and *n* is integer of 1 to 100.

3,845,169

α,ω-BIS-(O,O′-DIORGANOPHOSPHONYLMETHYL-O-ORGANOPHOSPHINYL)-ALKANES

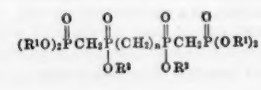
Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 855,069, Aug. 15, 1969. This application Oct. 16, 1972, Ser. No. 298,063

Int. Cl. C07f *9/32*

U.S. Cl. 260—932 **2 Claims**

1. α,ω-Bis-(O,O′-diorganophosphonylmethyl-O-organophosphinyl)-alkanes of the general formula



in which R^1 and R^2 signify identical or different alkyl groups having from 1 to 4 carbon atoms and *n* is an integer of 4 to 6.

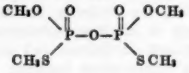
3,845,170

TETRAMETHYL-DITHIOLPYROPHOSPHORIC ACID ESTER AND METHOD OF PREPARATION

Wolfgang Hofer, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 2, 1972, Ser. No. 303,302
Claims priority, application Germany, Nov. 16, 1971, P 21 56 718.0
Int. Cl. C07f 9/06, 9/08
U.S. Cl. 260—933 **3 Claims**

1. Tetramethyl-dithiolpyrophosphoric acid ester of the formula



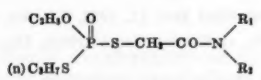
3,845,171

O-ETHYL-S-n PROPYL-S-CARBAMOYLALKYL DITHIOPHOSPHATES

Ernst Beriger, Grabenmattweg 29, Allschwil, Switzerland

No Drawing. Filed Dec. 18, 1972, Ser. No. 315,973
Claims priority, application Switzerland, Dec. 24, 1971, 18,909/71; Nov. 3, 1972, 16,041/72
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—943 **4 Claims**

1. A compound of the formula



wherein R_1 represents hydrogen or methyl and R_2 represents $—CH_2OCH_3$, $—C_2H_4OCH_3$ or $—C_3H_6OCH_3$.

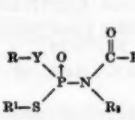
3,845,172

N - HYDROCARBOYL PHOSPHOROAMIDOTHIOATES AND PHOSPHOROAMIDODITHIOATES

Philip S. Magee, Ignatio, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 148,139, May 28, 1971, which is a Continuation-in-part of application Ser. No. 13,846, Feb. 24, 1970, now Patent No. 3,716,600, which in turn is a continuation-in-part of abandoned application Ser. No. 810,383, Mar. 25, 1969. This application Dec. 21, 1972, Ser. No. 317,478
The term of this patent subsequent to Feb. 13, 1990, has been disclaimed
Int. Cl. A01n 9/36; C07f 9/24
U.S. Cl. 260—956 **8 Claims**

1. A compound of the formula



wherein R is alkenyl or alkynyl of up to 6 carbon atoms, R^1 is alkyl, alkenyl or alkynyl of up to 6 carbon atoms, R^3 is hydrogen or alkyl of 1 to 6 carbon atoms and R^2 is hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, alkenyl of 2 to 18 carbon atoms or alkynyl of 3 to 18 carbon atoms and Y is oxygen or sulfur.

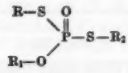
3,845,173

PHOSPHORODITHIOLATES

Keimei Fujimoto, Kobe, Kunio Mukai, Amagasaki, Takaji Yamamoto, Fujisawa, and Kouichi Ishibe, Naka-gun, Japan, assignors to Sumitomo Chemical Company, Limited

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,236
Claims priority, application Japan, Dec. 30, 1971, 47/1,750, 47/1,751; Jan. 8, 1972, 47/4,853
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—956 **5 Claims**

1. A phosphorodithiolate compound of the formula:



wherein R_1 is methyl or ethyl, R_2 is chlorine or bromine substituted allyl, and R is n-propyl.

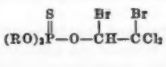
3,845,174

O,O-DIALKYL-O-(1,2-DIBROMO-2,2-DICHLOROETHYL)-THIONOPHOSPHORIC ACID ESTER

Wilhelm Sirrenberg, Sprockhovel, Westphalia, Wolfgang Behrenz and Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 15, 1973, Ser. No. 388,686
Claims priority, application Germany, Aug. 24, 1972, P 22 41 625.7
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—963 **8 Claims**

1. A haloalkylthionophosphoric acid ester of the formula



in which

R is a straight-chain alkyl radical of 1 to 6 carbon atoms.

3,845,175

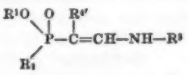
PROCESS FOR PREPARING 1 - SUBSTITUTED VINYL PHOSPHONATES OR PHOSPHINATES

Wataru Nagata, Nishinomiya, and Yoshio Hayase, Sakai, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

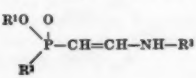
No Drawing. Original application Feb. 27, 1969, Ser. No. 803,106, now Patent No. 3,673,284. Divided and this application Apr. 11, 1972, Ser. No. 243,045
Claims priority, application Japan, Mar. 7, 1968, 43/14,901; Mar. 19, 1968, 43/18,134, 43/18,135; Mar. 30, 1968, 43/20,805
Int. Cl. C07f 9/38
U.S. Cl. 260—968 **6 Claims**

We claim:

1. A process for preparing a compound of the formula:



wherein R^1 is a lower alkyl group, R^2 is a member selected from the group consisting of R^1O, a lower alkyl group, an aralkyl group of 7–8 carbon atoms and an aryl group of 6–7 carbon atoms, R^3 is a member selected from the group consisting of an acyclic or cyclic alkyl group of 1–6 carbon atoms and an aryl group of 6–7 carbon atoms, and $R^{4'}$ is a member selected from the group consisting of a lower alkyl group, an aralkyl group of 7–8 carbon atoms, an alkoxycarbonyl group containing up to 3 carbon atoms, and a halogen atom, which comprises reacting a compound of the formula:



wherein R^1, R^2 and R^3 each has the same meanings as described above, with a compound capable of releasing the radical $R^{4'}$ selected from the group consisting of an alkyl halogenide, an aralkyl halogenide, an alkoxycarbonyl halide and a halogenating agent, in an inert aprotic solvent in the presence of a basic catalyst selected from the group consisting of lithium, sodium, lithium hydride, sodium hydride, sodium amide, potassium amide, ethylmagnesium bromide, methylmagnesium iodide, ethylmagnesium chloride, butyl lithium and phenyl lithium, at a temperature ranging from −30° C. to 180° C.

3,845,176

PROCESS FOR MAKING PHOSPHONOTHIOUREIDES

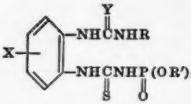
W. David Weir, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,683

Int. Cl. A01n *9/36;* **C07f** *9/24*

U.S. Cl. 260—984 **11 Claims**

1. A process for preparing a desired compound of the formula



wherein in each of the formulas of this claim,

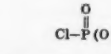
Y is O or S;

R is lower alkyl sulfonyl, benzenesulfonyl, substituted benzenesulfonyl wherein the substituents are selected from lower alkyl, nitro, halo, lower alkoxy, halo-lower alkyl, dialkylamino, or a trimethylene group bonded to the 3,4-adjacent carbons, lower acyl, benzoyl or substituted benzoyl wherein the substituents are selected from lower alkyl, nitro, halo, lower alkoxy, halo-lower alkyl, dialkylamino or CCl_3.

R' is lower alkyl, lower alkoxyalkyl, halo-lower alkyl, phenyl or substituted phenyl wherein the substituents are selected from lower alkyl, nitro, halo, lower alkoxy, halo-lower alkyl or dialkylamino; and

X represents from one to four substituents which may independently be hydrogen, lower alkyl, lower alkoxy or halogen;

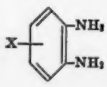
step 1—bringing together in an inert, water-free organic solvent boiling at least 30° C. and in which the organic reagents of said process are soluble, substantially equimolar amounts of the following: (a) the thiocyanate salt of a cation having a water-soluble chloride and (b) a chlorophosphate having the formula



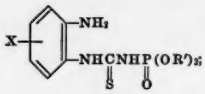
and permitting them to react at a temperature between about 10° and 90° C. for at least about one-half hour with agitation, whereby the following intermediate is formed: (c) the phosphonoisothiocyanate having the formula

$$S{=}C{=}N{-}P(OR')_2;$$

step 2—adding to the reaction mixture resulting from step 1 the following: (d) the di-amino benzene compound having the formula



in an amount which is substantially equimolar with said phosphonoisothiocyanate (c) and permitting it to react at a temperature below about 50° C. for at least about ten minutes with agitation, whereby the following intermediate is formed: (e) the benzene compound having the formula



step 3—adding to the reaction mixture resulting from step 2 the following: (f) the isocyanate or isothiocyanate having the formula R—N=C=Y in an amount which is at least substantially equimolar with said benzene compound (e) and permitting it to react at a temperature between about 10° and 80° C. for at least about ten minutes with agitation, whereby said desired compound is formed; and

step 4—separating said desired compound from the reaction mixture.

3,845,177

COATED PARTICLE OXIDE FUEL FOR NUCLEAR REACTORS

Ronald Cyril Burnett, Dorchester, England, assignor to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Dec. 11, 1972, Ser. No. 313,625

Claims priority, application Great Britain, Dec. 13, 1971, 57,853/71

Int. Cl. G21c *3/04, 21/02*

U.S. Cl. 264—.5 **4 Claims**

1. A method of manufacturing nuclear fuel particles comprising forming green particles of uranium oxide powder and binder mixed with powdered ceric oxide and molybdenum, said molybdenum retarding the affinity of said ceric oxide for oxygen,, heating the green particles to remove binder and re-heating the particles in an atmosphere of argon and hydrogen whereby at least some of the ceric oxide is reduced to a lower valency state and then coating the particles with fission product retaining material.

3,845,178

MANUFACTURE OF FUEL FOR NUCLEAR REACTORS UTILIZING A POLYMERISABLE RESIN

Milan Franc Hrovat, Rodenbach, Germany, and John Richard Cox Gough and Michael Stuart Thomas Price, Dorset, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,488

Claims priority, application Great Britain, Nov. 13, 1970, 54,278/70

Int. Cl. C21c *21/02*

U.S. Cl. 264—.5 **9 Claims**

1. A method of making pressed compacts of nuclear fuel residing in preparing a mixture including fission product retaining fuel particles, a solid polymerisable resin and a granular matrix material, loading a die cavity with the mixture, heating the die and contents of the cavity so that a uniform temperature exists throughout the contents, being a temperature at which the resin melts but does not suffer a change in chemical structure and together with the matrix material exhibits a uniform plasticity, and

pressing the contents of the cavity in the die whilst at that even temperature condition so that the die contents are compacted throughout the die cavity.

3,845,179

MAKING OF PARTICULATE SPHERES

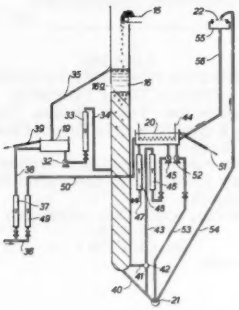
Peter Frederick Wace, Oxford, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of abandoned application Ser. No. 26,512, Apr. 8, 1970. This application Oct. 30, 1972, Ser. No. 301,732

Claims priority, application Great Britain, Apr. 9, 1969, 18,297/69

Int. Cl. B01f *5/00*

U.S. Cl. 264—14 **2 Claims**



10. A method of preparing particulate spheres by the gelling of liquid drops comprising feeding a gellable liquid mix to a drop forming means disposed adjacent to the upper end of a cylindrical column containing a gelling liquid capable of causing said gellable liquid to gel, forming drops of gellable liquid above the level of the gelling liquid and independently of any concurrent flow of gelling liquid, allowing the drops so formed to contact the gelling liquid so as to form gel spheres, feeding gelling liquid to the column through both a valveless gel sphere outlet channel extending below the base of the column and an inlet adjacent the base, so as to produce a non-fluidising upward flow in the column, allowing said gel spheres to pass down the column countercurrent to the gelling liquid, and proportioning the flow of gelling liquid into the column between the channel and the inlet thereby to control the outflow of gel spheres from the column through said valveless outlet channel, the greater the inflow through the channel compared with that through the inlet the smaller the outflow of gel spheres from the column.

3,845,180

PREPARATION OF PEARLESCENT PLASTICS

Jules Pinsky, Scarborough, N.Y., assignor to The Mearl Corporation, Ossining, N.Y.

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,923

Int. Cl. B29d *7/24, 27/00;* **B29h** *7/20*

U.S. Cl. 264—41 **8 Claims**

1. A method of imparting or improving pearlescence and increasing opacity which comprises cold drawing a plastic at a temperature at least 10° C. below its glass transition temperature until the desired physical appearance has been achieved, wherein the plastic is a thermoplastic polymer of an unsatured aliphatic hydrocarbon of 2 to about 10 carbon atoms which necks down upon cold drawing and has crystallinity or contains a platy substance.

3,845,181

PRODUCTION OF POROUS CERAMIC MATERIALS THROUGH THE USE OF FOAM ATTACKING AGENTS

Frank Ernest George Ravault, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,764

Claims priority, application Great Britain, Jan. 14, 1972, 1,927/72

Int. Cl. B28b *21/94;* **C04b** *21/06, 33/32*

U.S. Cl. 264—44 **4 Claims**

1. In the method of making a porous ceramic material which includes the steps of impregnating a body of polyurethane foam material with a slurry of finely divided ceramic material, and drying and firing the so-impregnated body, the improvement which comprises treating the polyurethane foam material no later than during impregnation of the foam with a foam attacking agent selected from the class consisting of glycols, long-chain fatty acids and alkoxy derivatives of amines.

3,845,182

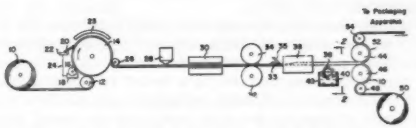
METHOD AND APPARATUS FOR PRODUCING UNSUPPORTED FOAMED RESINOUS SURFACE COVERINGS

John Biskup, Chatham, Robert K. Petry, Morris Plains, and Robert E. J. Murphy, Nutley, N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Aug. 30, 1971, Ser. No. 176,154

Int. Cl. B29c *1/04;* **B29d** *27/04*

U.S. Cl. 264—45.1 **14 Claims**



1. In a method for producing unsupported resinous surface coverings and the like by applying a foamable vinyl plastisol layer to a cellulose fiber felt substrate, gelling, fusing and foaming the layer by heat and then stripping the solidified foam layer from the substrate, the improvement which comprises:

(a) providing a moisture pervious cellulosic fiber support web as the substrate,

(b) applying an aqueous release coating of a water soluble hydroxyethyl cellulose to the support web,

(c) depositing a foamable vinyl plastisol layer on the release coat and heating the layer to gel the layer and further heating the gelled layer to fuse and foam the layer,

(d) impregnating the support web with moisture so as to raise the moisture content of the support web to about 4 to 10% by weight, and

(e) stripping the foamed layer from the support web.

3,845,183

METHOD OF MAKING A SOFT INTEGRAL-SKIN FOAM SEAT

David E. Harrison, Columbus, Miss., assignor to Beneke Division, Beatrice Foods Co., Columbus, Ohio

Filed Aug. 8, 1972, Ser. No. 278,862

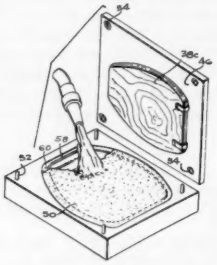
Int. Cl. B29d *27/00*

U.S. Cl. 264—46.6 **21 Claims**

1. A method for molding in two mold halves a composite soft seat having a substantially liquid and gas impervious integral skin comprising:

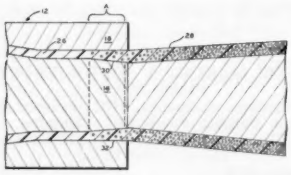
pouring a liquid polyurethane foamable reaction mixture into a first mold half in open face position to form a foam upon curing,

positioning an insert into one of said mold halves,
forming during curing and by molding a continuous solid flash forming a leak tight seal around the edge of said mold and integral with said foam, applying pressure and curring said reaction mixture to form said foam,
removing said pressure,
pouring a liquid polyurethane reaction mixture into a second mold half in open face position,
inverting and placing said first mold half containing said



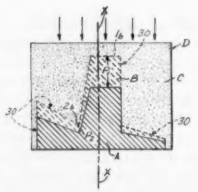
cured polyurethane foam and said continuous flash over the top of said second mold half to cover said second mold half and said reaction mixture contained therein and the rigid insert between said first and second mold halves,
sealing the edges of said first mold half from the reaction mixture of said second half by said continuous flash around said first mold half,
curing said reaction mixture under pressure in said second mold half while permitting said reaction mixture to contact the rigid insert and the cured polyurethane foam of said first mold half including the continuous flash thereof, while maintaining the reaction mixture from said second mold half from contact with the sides of the first molded polyurethane foam, whereby to form an integral composite soft seat having an imprevious integral skin upon demolding and severing said continuous flash.

3,845,184
EXTRUSION OF FOAMED POLYMER OVER DIVERGING MANDREL EXTENSION
Ludo C. Nackaerts, Louvain, Belgium, assignor to Phillips Petroleum Company
Filed Oct. 24, 1972, Ser. No. 299,833
Int. Cl. B29d *23/04, 27/00;* **B29f** *3/04*
U.S. Cl. 264—54 **10 Claims**



1. A process for forming low density foamed extrudates comprising:
admixing an expanding agent with a thermoplastic polymer;
rendering said thus formed admixture into a molten condition;
and maintaining said polymer mixture in said molten condition under sufficient pressure so substantially no expansion takes place within an extruder;
thereafter passing said molten admixture through an annular channel of a die having a gradually increasing cross-sectional area so as to allow said polymer to gradually expand as it moves toward the die end; and
upon exiting from the die gradually expanding said thus formed and expanded annular extrudate radially outwardly by passing the same over a mandrel which has straight walls diverging toward a downstream end thereof, said mandrel extending beyond an end of said annular channel a distance equal to 1 to 20 times a diameter of said mandrel, an outer surface of said extrudate not being in contact with any forming surface during this step.

3,845,185
METHOD FOR PRESSURE SINTERING A REFRACTORY POWDER
Osami Kamigaito and Yoichi Oyama, Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan
Continuation-in-part of abandoned application Ser. No. 161,060, July 9, 1971. This application Mar. 30, 1973, Ser. No. 346,624
Claims priority, application Japan, July 18, 1970, 45/62,921
Int. Cl. F27b *9/14*
U.S. Cl. 264—86 **6 Claims**



1. A method of producing a precisely dimensioned sintered product by pressing a refractory powder along one direction, comprising,
(1) forming a refractory powder into a first body of non-uniform dimension along the said one pressing direction and similar to the desired product in shape but elongated at the same fixed ratio for all sections of said desired product parallel to said pressing direction,
(2) covering said first body with a layer of a parting agent having a higher sintering temperature than that of said refractory powder,
(3) forming another portion of the said refractory powder into at least one second body which has the same density as that of said first body and which interfits with said first body to form a composite body having a uniform thickness in said pressing direction,
(4) assembling said first and second bodies into said composite body,
(5) placing said composite body within a die,
(6) compressing said composite body within said die by applying pressing force along said pressing direction of said first body to produce a reduction of thickness amounting to said fixed ratio for all sections of said first body parallel to said pressing direction

while subjecting the composite body to the sintering temperature of said refractory powder,

(7) removing the composite body from said die, and

(8) removing the resultant sintered second body from the resultant sintered first body of reduced thickness in said pressing direction to yield said precisely dimensioned sintered product as said resultant sintered first body.

3,845,186

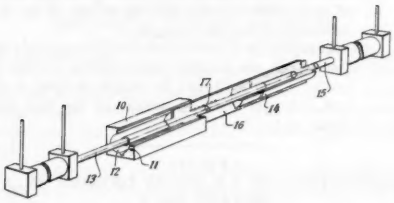
DISSIPATION OF ELECTROSTATIC CHARGES FROM INSULATING MATERIALS

Allen Frederick Shaw, near Reading, Berkshire, England, assignor to Superflexit Limited, Buckinghamshire, England

Continuation of application Ser. No. 92,780, Nov. 25, 1970. This application June 23, 1972, Ser. No. 265,480

Int. Cl. B29f *3/00*

U.S. Cl. 264—104 **1 Claim**



1. A method of manufacturing an electrically conductive plastic tube comprising the steps of:

molding a pair of preform tube halves from an extrudable, sinterable plastic material incorporating a volatile lubricant, each preform being a relatively thick walled semi-cylindrical member having a longitudinal semi-cylindrical bore, the bore of one of said preforms having a larger radius than the other, applying a conductive coating comprising extrudable, sinterable plastic material incorporating from 3 to 25% by weight conductive filler and volatile lubricant within the bore of larger radius to such a thickness as to reduce the bore to the same size as the bore of the other preform, placing the two preforms in face to face relation to define a cylinder and extruding the same through a die to form a tube, driving off said lubricant, and thereafter subjecting said tube to elevated temperatures to effect sintering of said tube.

3,845,187

METHOD OF MOLDING A LATCH OPENING

Kurt Gunnar Dahlberg, Pittsford, N.Y., assignor to Thermo-Trim, Inc., Rochester, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,914

Int. Cl. B29c *17/00*

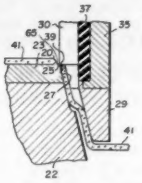
U.S. Cl. 264—154 **4 Claims**

1. In the molding of a plastic container by forming a softened sheet of said plastic between a pair of mold parts, an improved molding operation for forming a latch opening in said container, said improvement comprising:

(a) stretching said plastic sheet over a die surface arranged on one of said mold parts in the region of said latch opening;

(b) pressing a former through said stretched plastic and into contact with said die surface to cut through said plastic along one edge of said latch opening as said mold parts close;

(c) scraping said former along said die surface away from said cut in the region of said latch opening while said mold parts close further;



(d) pushing said plastic across said scraped region away from said cut and into a compressed wall of said plastic having an edge spaced from said cut to form said opening; and

(e) tearing said plastic along each side edge of said latch opening as said plastic is pushed across said scraped region by said former.

3,845,188

PROCESS FOR THE RECOVERY OF GROUP I-B METAL HALIDES FROM BIMETALLIC SALT COMPLEXES

David G. Walker, Baytown, and Donald J. Haase, Houston, Tex., assignors to Tenneco Chemicals, Inc.

No Drawing. Filed Sept. 17, 1973, Ser. No. 398,148

Int. Cl. C01g *5/00, 3/04, 7/00*

U.S. Cl. 423—42 **7 Claims**

1. The process for the recovery of Group I–B metal halide from a liquid sorbent that is a solution in an aromatic hydrocarbon of a bimetallic salt complex having the formula

$$M_I M_{II} X_n \cdot \text{Aromatic}$$

wherein M_I is a Group I–B metal, M_{II} is a Group III–A metal, X is halogen, n is the sum of the valences of M_I and M_{II}, and Aromatic is a monocyclic aromatic hydrocarbon having 6 to 12 carbon atoms that comprises contacting the liquid sorbent with anhydrous ammonia, thereby forming a reaction product that consists essentially of solid M_I halide and a solution of NH_3:M_{II} halide in the aromatic hydrocarbon, and separating the M_I halide from said reaction product.

3,845,189

HYDROMETALLURGICAL RECOVERY OF NICKEL VALUES

Marilyn Miller, Leonhard A. Goeller, and Laurence G. Stevens, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed June 7, 1972, Ser. No. 263,360

Int. Cl. C22b *1/00, 3/00, 23/04*

U.S. Cl. 423—150 **7 Claims**

1. In the hydrometallurgical recovery of nickel from a nickel bearing source in which treated metal-containing material is subjected to oxidative leaching with an ammoniacal solution to dissolve the metal, the improvement which comprises pretreating said nickel bearing source at a temperature of from 50° to 250° F., with an aqueous solution of a hydrogen halide, said hydrogen halide concentration in said solution being from about 0.1% to about 15%, the amount of said hydrogen halide solution being from about 10% to about 150% by weight of the nickel bearing source, and thereafter subjecting the pretreated nickel bearing source to a reducing treatment utilizing a reducing gas at a temperature of from about 1,000° to about 1800° F., to provide a reduced nickel bearing source.

3,845,190

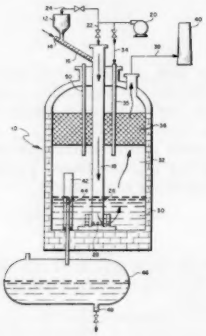
DISPOSAL OF ORGANIC PESTICIDES

Samuel J. Yosim and Donald E. McKenzie, Woodland Hills, and Le Roy E. Grantham, Calabasas, Calif., and James R. Birk, Hinsdale, Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of abandoned application Ser. No. 264,646, June 20, 1972. This application May 16, 1973, Ser. No. 360,997

Int. Cl. B01j *1/00*

U.S. Cl. 423—184 8 Claims



1. A waste-control process for the ultimate disposal of an organic pesticide resulting in negligible environmental pollution comprising:

feeding the pesticide and a source of oxygen into a pool of a molten salt consisting essentially of an alkali metal carbonate or mixture of alkali metal carbonates or a major portion of an alkali metal carbonate and a minor portion of at least 1 wt. percent of an alkali metal sulfate to thermally decompose and at least partially oxidize said pesticide to form decomposition products including a gaseous effluent, and then

venting a gaseous effluent product consisting essentially only of gases selected from carbon dioxide, water vapor, oxygen and nitrogen to the atmosphere while retaining the remaining decomposition products of the pesticide in the melt.

3,845,191

METHOD OF REMOVING HALOCARBONS FROM GASES

John MacMillan Bruce, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 2, 1972, Ser. No. 259,073

Int. Cl. B01d *53/34*

U.S. Cl. 423—240 8 Claims

1. A process for the purification by oxidation of a waste stream containing a material selected from the group consisting of chlorofluorocarbon, chlorofluorohydrocarbon, and mixtures thereof which comprises at a temperature of 750° C. to 1100° C. contacting said stream and oxygen with a bed containing a metal oxide selected from the group consisting of an oxide of either calcium, aluminum, barium, magnesium, iron, or nickel and mixtures to form the corresponding metal halides and carbon dioxide from the chlorofluorocarbon or the corresponding metal halides, carbon dioxide and water from the chlorofluorohydrocarbon.

3,845,192

USE OF ANALGESIC COMPOSITIONS

Joseph A. Miller, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 880,943, Nov. 28, 1969. This application May 10, 1971, Ser. No. 142,008

Int. Cl. A61k *27/00*

U.S. Cl. 42—244 5 Claims

1. The method of obtaining improved analgesia which comprises administering to a warm-blooded animal a composition comprising

(1) a first substance in an amount representing from 0.5 to 30 milligrams as the free base per kilogram of animal body weight, said first substance being α-*d*-propoxyphene or a pharmaceutically acceptable salt thereof, and

(2) a second substance in an amount which potentiates the first substance, said second substance being

(a) chlordiazepoxide or a pharmaceutically acceptable salt thereof, in an amount representing a ratio of from 0.26 to 1.06 parts by weight thereof as the free base per part by weight of the first substance as the free base; or

(b) diazepam or a pharmaceutically acceptable salt thereof, in an amount representing a ratio of from 0.15 to 0.60 part by weight thereof as the free base per part by weight of the first substance as the free base.

3,845,193

PRODUCTION OF URANIUM DIOXIDE IN A ROTARY KILN

James Edgar Littlechild, Lytham St. Annes, and George Marshall Gillies, St. Annes, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Continuation of abandoned application Ser. No. 78,206, Oct. 2, 1970. This application Mar. 13, 1973, Ser. No. 340,875

Claims priority, application Great Britain, Oct. 15, 1969, 50,791/69

Int. Cl. C01g *43/02*

U.S. Cl. 423—261 3 Claims

1. A process for the conversion of uranium hexafluoride to uranium dioxide which comprises injecting uranium hexafluoride vapor into an upper end of a process vessel comprising an inclined rotary barrel type kiln, reacting said uranium hexafluoride vapor in said upper end with dry steam to form a plume of uranyl fluoride powder, said plume being directed towards the upper end of the barrel of the kiln so that the majority of the uranyl fluoride produced is deposited directly in the upper end of the barrel of the kiln and converting uranyl fluoride powder to uranium oxide powder by reacting the uranyl fluoride passing down the barrel of the kiln with a reactant selected from the group consisting of steam, hydrogen and a steam/hydrogen mixture, said reactant passing in countercurrent flow to the uranyl fluoride, at a temperature higher than the temperature in said upper end and sufficient to convert said uranyl fluoride powder to uranium dioxide.

3,845,194

PROCESS FOR THE REGENERATION OF PHOSPHORUS OXYCHLORIDE OR OXYBROMIDE FROM REACTION MIXTURES

Tibor Somlo and Alain Claude Rochat, Birsfelden, and James Murphy, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 27, 1972, Ser. No. 292,562

Claims priority, application Switzerland, Oct. 8, 1971, 14,714/71

Int. Cl. C01b *25/10*

U.S. Cl. 423—300 12 Claims

1. A process for the dehydration or the halogen-replacement of a hydroxyl group in an organic compound

with a phosphorus oxyhalide, selected from the group consisting of phosphorus oxychloride and phosphorus oxybromide, without substantial consumption of the phosphorus oxyhalide, comprising the steps of treating the organic compound with a phosphorus oxyhalide to produce a dehydrated or halogenated organic reaction product and a polymeric phosphorus compound having PO_2Cl, PO_2Br or PO_2OH as the repeating unit, subsequently treating the reaction mixture with a phosphorus pentahalide selected from the group consisting of phosphorus pentachloride and phosphorus pentabromide or with phosphorus trichloride and chlorine or phosphorus tribromide and bromine to regenerate the phosphorus oxyhalide from the polymeric phosphorus compound, and finally separating the resulting phosphorus oxyhalide from the reaction mixture.

3,845,195

METHOD FOR CONTINUOUS PREPARATION OF CRYSTALLINE SOLIDS

Larry J. Kramer, Lyndhurst, Ohio, assignor to General Electric Company

Filed May 11, 1972, Ser. No. 252,296
Int. Cl. C01b *15/16, 25/26*
U.S. Cl. 423—308 **6 Claims**

1. A process for continuous preparation of α-$SrHPO_4$ phosphor precipitate in the form of a plurality of crystals having a larger average particle size and more narrow size distribution than is conventionally obtained which comprises:

(a) continuously feeding a solution of a strontium salt through first porous diffusion media into a moving body of solvent,

(b) continuously feeding a solution of a dibasic phosphate compound through second porous diffusion media spaced apart from said first porous diffusion media into the moving body of solvent,

(c) heating the moving body of solvent while mixing to form an α-$SrHPO_4$ precipitate, under conditions wherein the reaction is controlled by liquid diffusion between the solutions of a strontium salt and a dibasic phosphate compound, and

(d) continuously removing said precipitate from the reactant solution.

3,845,196

FIREFLOOD POLLUTION PREVENTION

Vaughan W. Rhoades, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Continuation-in-part of application Ser. No. 193,953, Oct. 29, 1971. This application Sept. 28, 1973, Ser. No. 401,761
Int. Cl. C01b *17/04*
U.S. Cl. 423—573 **10 Claims**

1. In the production of hydrocarbons from a hydrocarbon-bearing subsurface formation wherein combustion of hydrocarbons is effected in the formation, air to sustain the combustion is injected through an injection well, the air injected to sustain the combustion is compressed by a compressor driven by a combustion engine, and in situ combustion product gases are produced from a production well; wherein H_2S is produced as part of the in situ combustion product gases from the combustion well; the improvement comprising:

a. passing an oxygen-containing gas in heat exchange relationship with the combustion engine employed to power the compressor to heat the oxygen-containing gas to a temperature at least sufficient to react with H_2S, and

b. passing the oxygen-containing gas thus heated into conduct with the H_2S containing in situ combustion product gases from the production well at a temperature sufficient that the oxygen reacts with the H_2S to form elemental sulphur and thus remove the H_2S.

3,845,197

PROCESS FOR PURIFYING GASES CONTAINING SULPHUR COMPOUNDS AND RECOVERING ELEMENTAL SULPHUR

Philippe Renault, Noisy-le-Roi, Andre Deschamps, Chatou, and Claude Dezael, Maisons-Laffitte, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,403
Claims priority, application France, Jan. 29, 1971, 7103181
Int. Cl. C01b *17/04*
U.S. Cl. 423—575 **20 Claims**

1. In a process for purifying a gas containing H_2S, SO_2 and organic sulphur compounds, said process comprising reacting H_2S and SO_2 in a sulphur producing reaction with an organic solvent at 20–160° C., the improvement comprising the preliminary steps of

(a) reacting said gas and steam in a first reaction zone in the presence of a catalyst consisting essentially of alumina at 250–400° C. to convert said organic compounds substantially completely to H_2S while effecting substantially no conversion of the SO_2 in the gas to H_2S, resulting in a gas having an undesirably high molar ratio of H_2S/SO_2, and

(b) reacting resultant gas from step (a) with sufficient oxygen in a second reaction zone at 300–500° C., to convert a portion of the H_2S in said gas to SO_2 and to form a gas having a desirably lower molar ratio of H_2S/SO_2 between 1.6 and 3.

3,845,198

ACICULAR GAMMA IRON OXIDE PROCESS

Guy G. Marcot, Alhambra, Calif., assignor to Bell & Howell Co., Pasadena, Calif.

No Drawing. Filed May 3, 1972, Ser. No. 249,923
Int. Cl. C01g *49/02, 49/06*
U.S. Cl. 423—634 **2 Claims**

1. In a process for the preparation of acicular, magnetic γ-Fe_2O_3 by reduction of precursor α-FeOOH to Fe_3O_4 followed by oxidation to said γ-Fe_2O_3, wherein said precursor α-FeOOH is prepared by oxidizing ferrous ion in an acidic crystal growth liquid solution, in the presence of seed crystals of α-FeOOH added thereto, while adding alkali to said acidic crystal growth solution to precipitate said precursor α-FeOOH, said seed crystals being prepared by oxidation of ferrous ion in a seed preparation liquid solution containing alkali, the improvement, wherein (a) said seed crystals are prepared at a temperature lower than 50° C., (b) said seed preparation solution contains an amount of alkali at least 15% in excess of a stoichiometric amount required for oxidative conversion of said ferrous ion to ferric ion and (c) acid is added to said seed preparation solution after full oxidative preparation of said seed crystals, but before addition of said seed crystals to said crystal growth solution, to lower the pH of said seed preparation solution to 2–5.

3,845,199

PREPARATION OF BERYLLIUM HYDRIDE

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Dec. 20, 1965, Ser. No. 515,516
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 **10 Claims**

1. Process for the preparation of beryllium hydride which comprises, in the first stage, reacting an anhydrous beryllium halide wherein the halogen has an atomic number from 17 to 53, inclusive, with an alkali metal trialkyl borohydride wherein the alkali metal has an atomic number from 3 to 55, inclusive, and each alkyl group contains from 1 to about 6 carbon atoms, inclusive, the reaction being carried out in the presence of a solvent for the beryllium halide to produce solid alkali metal halide and a dissolved beryllium intermediate and, in the second stage, separating said alkali metal halide from the reaction system, and thereafter pyrolyzing said intermediate to produce beryllium hydride.

3,845,200
CATALYST FOR DECOMPOSITION OF HYDROCARBONS AND PROCESS
Joseph R. Kiovsky, Kent, Ohio, assignor to Norton Company, Worcester, Mass.
No Drawing. Continuation-in-part of abandoned application Ser. No. 44,638, June 8, 1970. This application Mar. 20, 1972, Ser. No. 236,221
Int. Cl. C10l *1/20*
U.S. Cl. 423—653 1 Claim

1. The process of reacting hydrocarbons to yield hydrogen comprising heating a catalyst consisting of nickel oxide supported on a porous base of ceramic bonded zircon grains to a temperature of from 1800° to 2200° F., passing said hydrocarbons over said catalyst, and recovering the product hydrogen.

3,845,201
SOLID STATE OPHTHALMIC MEDICATION DELIVERY METHOD
Heskel M. Haddad, 1200 5th Ave., New York, N.Y. 10029, and Spiro P. Loucas, 16 Toni Court, Plainview, N.Y. 11803
Filed Apr. 24, 1972, Ser. No. 246,661
Int. Cl. A61k *27/12*
U.S. Cl. 424—22 16 Claims

1. In the method of obtaining the ophthalmic pharmacological effect of a medicament comprising inserting a complete ophthalmic dosage of medicament in solid form into the cul-de-sac of the eye between the eyeball and the lid to dispense the medicament to the eye over a prolonged period of time, the improvement by means of which the cul-de-sac is left free of tear insoluble residue after said medicament is dispensed, which comprises employing a solid matrix of a non-irritating pharmacologically acceptable polyuronic acid or carboxymethylcellulose salt of said medicament, free from tear insoluble carriers, said matrix adapted to form a gel-matrix after insertion into the cul-de-sac and to dissolve completely for slow release of said dosage.

3,845,202
LUNG SCANNING PROTEIN MACROAGGREGATE OF INDIUM 113m IN A SULFIDE-SULFUR COMPOSITION
Manuel Tubis and Marvin B. Cohen, Los Angeles, and Calvin D. Gilliam, Sylmar, Calif., assignors to the United States of America as represented by the Administrator of Veterans Affairs
No Drawing. Filed Oct. 24, 1972, Ser. No. 300,315
Int. Cl. A61k *27/04*; G01e *1/20*
U.S. Cl. 424—1 7 Claims

1. A macroaggregate composition suitable for use as a lung scanning agent, comprising the product obtained by reacting the eluate from a Tin 113–Indium 113m generator with a physiologically acceptable proteinaceous substance selected from the group consisting of gelatin and albumin and a sulfur compound which is capable of precipitating Indium 113m in the sulfide form along with sulfur during the course of the reaction, the product being further reacted with an aldehyde crosslinking agent for the physiologically acceptable proteinaceous substance to produce a composition in particulate form.

3,845,203
ANTIBIOTIC A–25822 AND PROCESS FOR PRODUCTION THEREOF
Robert H. Williams, Marvin M. Hoehn, and Karl-Heinz Michel, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of abandoned application Ser. No. 230,399, Feb. 29, 1972. This application Feb. 2, 1973, Ser. No. 327,171
Int. Cl. A61b *21/00*
U.S. Cl. 424—122 4 Claims

1. The antibiotic A–25822 factor D which is a white compound having a molecular weight of 427 as determined by mass spectrometry; which has an empirical formula of $C_{23}H_{45}NO_5$; which in 66 percent aqueous dimethylformamide shows the presence of one titratable group having a pKa of 7.7 as determined by electrometric titration; which has the specific rotation:

$$[\alpha]_D^{25}+39° \text{ (C=0.725, methano)l;}$$

which has the approximate elemental composition of carbon, 78.40 percent; hydrogen, 10.28 percent; nitrogen, 3.17 percent; which in ethanol has the following observed absorption maxima in its ultraviolet spectrum:

$\lambda_{max.}$ 235 mμ (neutral pH)
$\lambda_{max.}$ 270 mμ (acidic pH);

and which in chloroform has the following distinguishable absorption maxima in its infrared spectrum: 2.97, 3.43, 3.50, 3.7 (broad), 5.97, 6.04, 6.09, 6.15, 6.82, 6.93, 7.28, 7.34, 7.42, 7.7, 7.94, 8.1, 8.34, 8.6, 8.87, 9.10, 9.18, 9.35, 9.61, 9.77, 10.29, 10.4, 10.76, 10.92 and 11.32 microns; or the non-toxic, pharmaceutically acceptable acid addition salts thereof.

3,845,204
SOMATOSTATIN AS INHIBITING AGENT IN PROLACTIN RELEASE
Norman H. Grant, Wynnewood, Pa., assignor to American Home Products Corporation, New York, N.Y.
No Drawing. Filed May 22, 1973, Ser. No. 362,692
Int. Cl. C07c *103/52*
U.S. Cl. 424—177 6 Claims

1. A method of inhibiting the release of prolactin in a mammal requiring inhibition of prolactin release, which comprises administering to said mammal an effective amount for inhibiting prolactin release of a material selected from the class consisting of H-Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH,

(I)

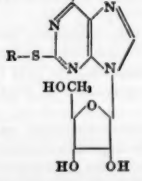
H-Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH ,

(II)

and the non-toxic acid addition salts thereof, said material of formula II being optionally substituted with a protecting group on the sulfhydryl moiety of each cysteinyl amino acid residue in said material of formula II, said protecting group being selected from the group consisting of benzyl, benzyloxycarbonyl, nitrobenzyl, trityl, methoxybenzyl and carboxymethyl.

3,845,205
2-LOWERALKYLTHIOADENOSINES
Mary Helen Maguire, Roland Herbert Thorp, and Denis Michael Nobbs, Sydney, New South Wales, Australia, assignors to The University of Sydney, New South Wales, Sydney, Commonwealth of Australia
No Drawing. Original application June 4, 1970, Ser. No. 43,570. Divided and this application May 4, 1973, Ser. No. 357,438
Int. Cl. A61k *27/00*
U.S. Cl. 424—180 4 Claims

1. A pharmaceutical composition for producing coronary vasodilatation or hypotensive activity comprising a pharmaceutical carrier and a compound of the formula:



in which R is an alkyl group of from 2 to 4 carbon atoms.

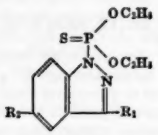
3,845,206

INSECTICIDAL AND FUNGICIDAL COMPOSITIONS CONTAINING 1-O,O-DIETHYLTHIOPHOSPHONYL-INDAZOLES

Michel Sauli, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Original application Jan. 23, 1970, Ser. No. 5,347, now Patent No. 3,763,180. Divided and this application Jan. 29, 1973, Ser. No. 327,317
Claims priority, application France, Jan. 27, 1969, 6901549; Oct. 22, 1969, 6936237
Int. Cl. A01n 9/36
U.S. Cl. 424—200 10 Claims

1. An insecticidal and fungicidal composition comprising, as the active ingredient, an organophosphorus compound of the formula:



wherein R_1 represents halogen, alkyl of 1 through 4 carbon atoms, phenyl, cyano, carbamoyl or thiocarbamoyl, and R_2 represents hydrogen, halogen or nitro, in association with at least one diluent or adjuvant compatible with the organophosphorus compound and suitable for use in agricultural insecticidal and fungicidal compositions, the quantity of organophosphorus compound in the composition being between 0.005% and 80% by weight of the composition.

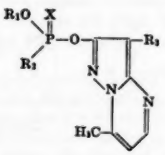
3,845,207

COMBATTING PESTS WITH O-PYRAZOLO-PYRIMIDINE-(THIONO) - PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal-Elberfeld, Ingeborg Hammann and Wolfgang Behrenz, Cologne, Bernhard Homeyer, Opladen, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application June 29, 1971, Ser. No. 158,046, now Patent No. 3,761,479. Divided and this application Mar. 29, 1973, Ser. No. 346,219
Claims priority, application Germany, July 8, 1970, P 20 33 947.3
Int. Cl. A01n 9/36
U.S. Cl. 424—200 10 Claims

1. A method of combating a pest selected from the group consisting of insect, acarid, and nematode pests which comprises applying to the pests or a habitat thereof an insecticidally, acaricidally, or nematocidally effective amount of an O-pyrazolopyrimidine-(thiono)-phosphoric (phosphonic) acid ester of the formula:



in which

R_1 is alkyl with 1 to 6 carbon atoms,
R_2 is alkyl with 1 to 4 carbon atoms or alkoxy with 1 to 6 carbon atoms,
R_3 is hydrogen, chlorine or bromine, and
X is oxygen or sulfur.

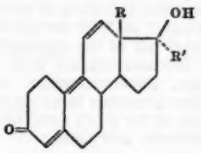
3,845,208

METHOD OF INCREASING THE CALIBER OF POULTRY EGGS

Jean Andre Grandadam, Saint-Maur des Fosses, France, assignor to Roussel-UCLAF, Paris, France

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,123
Claims priority, application France, Jan. 20, 1972, 7201911
Int. Cl. A23k 1/18, 1/165
U.S. Cl. 424—243 4 Claims

1. A method of increasing the caliber of eggs of poultry comprising orally administering to egg laying poultry an amount effective to increase the caliber of eggs of at least one active compound of the formula



wherein R is lower alkyl of 1 to 6 carbon atoms and R' is selected from the group consisting of allyl, 2-methylallyl, 2-butenyl, trifluorovinyl, ethynyl, propargyl, propynyl chlorethynyl butadiynyl and cyclopropyl.

ERRATUM

For Class 424—244 see:
Patent No. 3,845,192

3,845,209

PHARMACEUTICAL PREPARATION FOR THERAPEUTIC TREATMENT, AND METHOD OF CARRYING OUT THERAPEUTIC TREATMENTS

Jean Heusser, Langnau, and Max Glasbrenner, Zurich, Switzerland, assignors to Hommel Aktiengesellschaft, Adliswil, Switzerland

No Drawing. Filed May 17, 1972, Ser. No. 254,160
Claims priority, application Switzerland, May 26, 1971, 7,728/71
Int. Cl. A61k 27/00
U.S. Cl. 424—254 2 Claims

1. A method of treating conditions encompassing a reduced utilization capacity of brain and heart cells for oxygen and glucose comprising administering to a patient an effective dosage of pure 5-allyl-5-(2-hydroxyethyl)-barbituric acid which is free of hypnotic effects in a compatible pharmaceutical carrier.

3,845,210

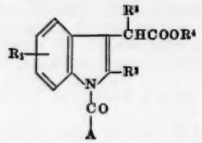
SOLID COMPOSITION COMPRISING INDOLYL-ALIPHATIC ACID DERIVATIVES FOR FORMING AN INJECTION

Nobuyasu Sato, 45 Kasugaoka 1-chome, Itami-shi, Japan; and Toshio Nakamura, 7–10 Namikicho; and Hiroshi Takenaka, 2–1 Kuwatacho, both of Ibaragi-shi, Japan; and Yutaka Mito, 13–5 Oloshimotomachi, Neyagawa-shi, Japan

No Drawing. Continuation of abandoned application Ser. No. 819,937, Apr. 28, 1969. This application Nov. 27, 1972, Ser. No. 309,741
Int. Cl. A61k 27/00
U.S. Cl. 424—266 3 Claims

1. A solid anti-rheumatic composition for forming an aqueous injection obtained by subjecting to lyophilization

a solution consisting essentially of an alkali metal salt of an indolylaliphatic acid derivative of the formula,



wherein R^1 is lower alkyl of 1 to 3 carbons, lower alkoxy of 1 to 2 carbons, hydrogen or halogen, R^2 is lower alkyl of 1 to 3 carbons, R^3 is hydrogen or lower alkyl of 1 to 3 carbons, R^4 is alkali metal, and A is phenyl, halogen substituted phenyl, styryl or pyridyl; an organic amine selected from the group consisting of histidine, lysine and arginine in an amount of 5–50 percent by weight based on the alkali metal salt of the indolylaliphatic acid derivative; a bulk increaser selected from the group consisting of mannite, glucose, dextrose, sodium chloride, glycine and sodium glutamate in an amount of about 5–10 times by weight of the alkali metal salt of the indolylaliphatic acid derivative and water.

3,845,211

METHOD FOR TREATING ALLERGIC DISORDERS DUE TO HISTAMINE

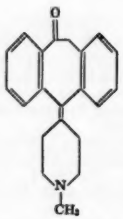
John D. Prugh, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Feb. 5, 1970, Ser. No. 9,049, which is a continuation-in-part of application Ser. No. 4,123, Jan. 19, 1970, both now abandoned. Divided and this application Sept. 13, 1971, Ser. No. 180,095

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **1 Claim**

1. A method for the treatment of allergic disorders due to histamine which comprises administering to human patients an effective antihistaminic amount of a compound having the formula



3,845,212

BIOSTAT AND PAINT COMPOSITION

Daniel J. Yovich, Kankakee, John L. Stout, Orland Park, and Ralph E. Tribbey, Kankakee, Ill., assignors to Kankakee Paint Manufacturing Company, Inc.

No Drawing. Filed Mar. 17, 1972, Ser. No. 235,834

Int. Cl. C09d *5/14*

U.S. Cl. 424—270 **1 Claim**

1. A synergistic bacteriostatic-fungistatic combination comprising a mixture of 2-(4-thiazolyl)-benzimidazole and benzyl bromoacetate in approximately equal amounts by weight.

3,845,213

1,2-DIPHENYL-3,5-DIOXOPYRAZOLIDINE COMPOUNDS USED TO TREAT INFLAMMATION

Fritz Eiden, Munich, and Gerhard Gauglitz, Hannover, Germany, assignors to Chem. pharmaz. Fabrik Dr. Hermann Thiemann GmbH

No Drawing. Filed Nov. 20, 1972, Ser. No. 307,889

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **4 Claims**

1. A pharmaceutical composition in dosage unit form for administration to obtain an antiphlogistic effect comprising an antiphlogistically effective amount of 4-thiocyanato-4-n-butyl-1,2-diphenyl-3,5-dioxopyrazolidine and a pharmaceutical diluent.

3,845,214

FERTILITY CONTROL PROCESS EMPLOYING ETHANOLAMINES

Duane Gordan Gallo and Robert Francis Majewski, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Continuation-in-part of application Ser. No. 73,192, Sept. 17, 1970, which is a continuation-in-part of application Ser. No. 11,873, Feb. 16, 1970, both now abandoned. This application Aug. 14, 1972, Ser. No. 280,303

Int. Cl. A01n *9/22*

U.S. Cl. 424—274 **21 Claims**

1. The process for reducing mammalian fecundity which comprises administering to a fertilized female mammal by the oral or parenteral routes during the period following ovulation and prior to the time when implantation occurs an effective implantation preventing dose of a compound selected from the group consisting of a compound having the formula

$$R^1—NHCH_2CH_2—O—R^2$$

wherein

R^1 is selected from the group consisting of lower alkyl having 2 to 5 carbon atoms inclusive, lower alkenyl having 3 to 5 carbon atoms inclusive, cycloalkenyl having 4 to 5 carbon atoms, cycloalkyl having 3 to 5 carbon atoms inclusive, dimethylamino, pyrrolidinyl, and an alkyl substituted cycloalkyl wherein said alkyl substituent has from 1 to 3 carbon atoms inclusive and said cycloalkyl has 3 to 5 carbon atoms inclusive;

R^2 is selected from the group consisting of hydrogen, benzoyl and an alkanoyl from 2 to 24 carbon atoms inclusive; or

R^1—NH is pyrrolidinyl and a pharmaceutically acceptable acid addition salt of said compound.

3,845,215

PHENYLALKANE DERIVATIVES IN THE TREATMENT OF INFLAMMATION

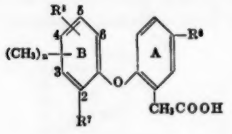
Keith Ernest Godfrey, Pocklington, England, assignor to Reckitt & Colman Products Limited, Yorkshire, England

No Drawing. Original application Apr. 9, 1971, Ser. No. 132,891, now Patent No. 3,766,263. Divided and this application May 4, 1973, Ser. No. 357,354

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **16 Claims**

1. A method for relief of an inflammatory condition which method comprises administering to a subject having such condition a therapeutically effective amount of a compound of the formula:



wherein

R^6 is selected from the group consisting of hydrogen and methyl;

R^7 is selected from the group consisting of chlorine, bromine and methoxy, provided that R^7 is methoxy only when R^8 is selected from the group consisting of chlorine at position 4 and bromine at position 4;

R^8 is selected from the group consisting of chlorine at position 4, bromine at position 4, chlorine at position 5, bromine at position 5, alkyl of 1 to 6 carbon atoms at position 4, trifluoromethyl at position 5 and methyl at position 6;
and n is 0, 1 or 2.

3,845,216

SLIME CONTROL COMPOSITION CONTAINING QUATERNARY AMMONIUM CHLORIDE AND ITS USE

Robert H. Brink, Jr., Doylestown, Bernard F. Shema, Glenside, and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 464, Jan. 2, 1970. This application Aug. 11, 1972, Ser. No. 280,013

Int. Cl. A01n *9/20*

U.S. Cl. 424—329 **9 Claims**

1. A method for controlling the growth of the microorganism *Aerobacter aerogenes* in an aqueous system in which said microorganism is found which comprises adding to said system so as to contact said microorganism an effective amount of a combination comprising B-bromo-B-nitrostyrene and didecyldimethyl ammonium chloride, where the weight ratio of the styrene to the chloride is from 95% to 5% to about 5% to 95%.

3,845,217

BUFFERED SMOKING SUBSTITUTE COMPOSITIONS

Ove Birger Ferno and Corfitz Bengt Ingvar Ohlsson, Helsingborg, Sweden, assignors to Aktiebolaget Leo, Helsingborg, Sweden

No Drawing. Filed Nov. 16, 1972, Ser. No. 307,397

Int. Cl. A23g *3/30*; A24b *15/00*

U.S. Cl. 426—3 **17 Claims**

1. In a chewable smoking substitute composition for providing a sense of smoking satisfaction without smoking, comprising a gum base, present in an amount of about 15 to about 80 percent by weight of the composition, and nicotine, the improvement which comprises the presence of a solid physiologically-acceptable water-soluble buffering agent dispersed in said chewable smoking substitute composition in an amount sufficient upon chewing of said composition to raise the pH of the saliva of the chewer above the normal physiological pH of said amount of buffering agent being about one-half to five percent by weight of the total composition.

3,845,218

ALCOHOLIC FERMENTATION PROCESS

Dorsey R. Mussell, Clare, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 20, 1973, Ser. No. 353,157

Int. Cl. C12g *1/00, 3/00*

U.S. Cl. 426—9 **5 Claims**

1. In a yeast-fermentation process for fermenting an aqueous fermentable sugar-containing solution to ethyl alcohol, the improvement whereby the fermentation is accelerated which comprises adding to the sugar solution containing up to about 30 grams of said sugar per 100 ml. of solution from about 25 to about 200 parts per million by weight of an O,O-dipropyl-phthalimidophosphonothioate or an O,O-dipropyl-(4-methylphthalimido) phosphonothioate, inoculating said solution with a yeast which ferments sugar to ethanol and allowing fermentation to proceed until fermentation of sugar to ethanol is substantially completed.

3,845,219

METHOD OF MAKING HIGH QUALITY FROZEN PIZZA CRUSTS

Arthur Federico, 4 Explorer Road, Ocean Harbour, Brigantine, N.J. 08203

Continuation-in-part of abandoned application Ser. No. 97,652, Dec. 14, 1970. This application Oct. 20, 1972, Ser. No. 299,282

Int. Cl. A21d *8/00*

U.S. Cl. 426—19 **3 Claims**

1. The method of making pizza crusts which comprises mixing together the following composition:

High gluten flour (approximately 13 to 14% protein)	100 pounds
Yeast	4.5 pounds
Sugar	9 pounds
Salt	7 ounces
Vegetable shortening	4.5 pounds
Whey	1.5 pounds
Eggs	18
Lukewarm water	78 pounds, 6½ oz.

thus forming a dough, allowing the dough to rise for ½ hour at 80° F. or 2½ hours to 3 hours at 50° F., rolling the dough to sheets approximately 1/16 inch thick, allowing the sheets to rise, baking the sheets of dough in pans to produce crusts, removing the crusts from the pans, allowing the crusts to cool to room temperature, assembling the individual crusts into a stack, the individual crusts being face-to-face, putting the stack of crusts into a container, applying about 50 pounds weight to the stack of crusts until the height will be less than one-half the original height, closing and sealing the container while maintaining the stack under compression, and freezing the sealed container.

3,845,220

COFFEE CARBONATED BEVERAGE

Shigeyoshi Suzuki, Osaka, Japan, assignor to Ogawa & Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,986

Claims priority, application Japan, Oct. 21, 1971, 46/83,776

Int. Cl. A23l *1/00*

U.S. Cl. 426—45 **6 Claims**

1. A method for controlling the foam production and foam stabilization properties of coffee carbonated beverages which comprises adding to an aqueous extraction liquid or an aqueous immersion liquid of parched coffee beans, an aqueous solution of an enzyme selected from the group consisting of protease, amylase, cellulase, hemicellulase and pectinase for sufficient time to alter said foam production and foam stabilization properties, then heating the resultant liquid to deactivate said enzymes and to sterilize said beverage.

3,845,221

HICKORY SMOKED FRENCH BARBECUE BAKERY PRODUCTS

Johnnie W. Hall, Lakeland, Fla., assignor to Halped Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 45,275, June 9, 1970. This application Aug. 8, 1972, Ser. No. 278,714

Int. Cl. A21d *2/00*

U.S. Cl. 426—62 **7 Claims**

1. A dry mix from which smoked barbecue flavored bakery products can be prepared comprising about:
25–65 weight percent flour
6–11 weight percent dry milk
2–8 weight percent powdered molasses or brown sugar
1–15 weight percent salt

2–16 weight percent dry yeast
7–16 weight percent barbecue spices
2–6 weight percent liquid or powdered smoke.

3,845,222
TEXTURIZING PROCESS FOR SINGLE CELL PROTEIN
Steven R. Tannenbaum, Framingham, Mass., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation-in-part of abandoned application Ser. No. 32,387, Apr. 27, 1970. This application Mar. 1, 1972, Ser. No. 230,949
Int. Cl. A23j *3/00*
U.S. Cl. 426—148 **9 Claims**

1. A process for imparting texture to microbial cells comprising the steps of:
(a) heating an aqueous paste of microbial cell material to a temperature within the range from about 150° to about 400° F. for a time period within the range from about 10 to about 300 seconds, said paste containing from about 10 to about 50 wt. percent water;
(b) simultaneously applying a shearing force to said cell paste, the shearing force corresponding to a shear rate of about 10 to about 60 r.p.m. and a torque of about 200 to about 2,000 meter-grams;
(c) extruding the heated and sheared cell paste through a die to provide a shaped extrudate; and
(d) exposing shaped extrudate to an oxygen-containing gas stream to produce a product which is chewy, crunchy, crispy and resists dispersion in water.

3,845,223
FROZEN CONFECTION STABILIZER SYSTEMS
John R. Moneymaker, Overland Park, and Maurice C. Meyer, Kansas City, Kans., assignors to Top-Scor Products, Inc., Kansas City, Kans.
No Drawing. Filed July 8, 1968, Ser. No. 743,008
Int. Cl. A23g *5/00*
U.S. Cl. 426—164 **3 Claims**

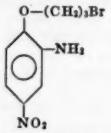
1. A stabilizer system for producing, in frozen confections, both emulsifier and improved stabilizer characteristics without materially increasing viscosity in the confection mix, comprising:
(a) a stabilizing gum selected from the group consisting of guar gum, locust bean gum, sodium carboxymethylcellulose and mixtures thereof coated with
(b) an emulsifier consisting of essentially fully saturated monoglycerides together with a member of the group consisting of polyoxyethylene (20) sorbitan tristerate and polyoxyethylene (20) sorbitan monooleate and mixtures thereof,
(c) said emulsifier being included in the system in an amount equal to between about 15% to 50% by weight of said stabilizing gum,
(d) the ratio of monoglycerides to sorbitan ester being between about 10 to 1 and 1 to 1 by weight.

3,845,224
FROZEN CONFECTION CONTAINING EMULSIFIER-COATED STABILIZER
John R. Moneymaker, Overland Park, and Maurice C. Meyer, Kansas City, Kans., assignors to Top-Scor Products, Inc., Kansas City, Kans.
No Drawing. Continuation of abandoned application Ser. No. 743,008, July 8, 1968. This application May 15, 1972, Ser. No. 253,175
Int. Cl. A23g *5/00*
U.S. Cl. 426—164 **8 Claims**

1. In the production of a frozen confection, containing butter-fat, milk solids non-fat, sugar solids, stabilizer, emulsifier and water, improving the smoothness, texture, body and storage stability thereof without correspondingly increasing the viscosity of the liquid mix predecessor of said confection comprising:
(a) coating stabilizing gum selected from the group consisting of guar gum, locust bean gum, sodium carboxymethylcellulose and mixtures thereof with a mixture of essentially fully saturated monoglycerides and sorbitan ester emulsifier, said sorbitan ester emulsifier being selected from the group consisting of polyoxyethylene (20) sorbitan tristerate and polyoxyethylene (20) sorbitan monooleate and mixtures thereof, the ratio of monoglycerides to sorbitan ester emulsifier being between about 10 to 1 and 1 to 1 by weight, the mixture being coated on the gum in an amount equal to between about 15% to 50% by weight of the gum, and
(b) adding the coated gum to the liquid mix in an amount effective to produce said improvements.

3,845,225
HALOGENATED AROMATIC COMPOUND HAVING SWEETENING PROPERTIES
Guy A. Crosby, Palo Alto, and Gerald C. Peters, Redwood City, Calif., assignors to Dynapol
No Drawing. Filed June 18, 1973, Ser. No. 370,646
Int. Cl. A23l *1/26*
U.S. Cl. 426—217 **2 Claims**

1. A composition comprising a food and a sweetener therefor, said sweetener a compound of the formula



wherein the compound is added in an effective amount to sweeten food.

3,845,226
PREPARATION OF CURD FROM MILK
Marie Pierre Goujard, Neuilly-sur-Seine, France, assignor to CH. Gervais, Societe Anonyme, Paris, France
Continuation of abandoned application Ser. No. 619,272, Feb. 28, 1967. This application Nov. 3, 1970, Ser. No. 86,616
Claims priority, application France, Mar. 16, 1966, 53,707; May 25, 1966, 62,912
Int. Cl. A23c *19/02*
U.S. Cl. 426—239 **9 Claims**

1. A method for manufacturing milk curd comprising acidifying whey in a manner which does not cause degradation of lactose until the pH value of said whey is between 0.5 and 2.5 by subjecting said whey to an acidifying electrodialysis, mixing said acidified whey with milk at ambient temperature in a proportion sufficient to bring the acidity of the mixture to a pH value lower than that which corresponds to the isoelectric point of the casein and separating the curd obtained from the remaining liquid.

3,845,227
METHOD OF PRODUCING CORNED BEEF
Gary W. Shults, Milford, and Eugen Wierbicki, Framingham, Mass., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Oct. 3, 1972, Ser. No. 294,758
Int. Cl. A22b *1/02;* **A22c** *18/00*
U.S. Cl. 426—266 **6 Claims**

1. A process for producing precooked corned beef which is capable of being further cooked or reheated with dry heat to produce a tender cooked corned beef product which comprises the steps of
a. deboning a whole beef carcass or a portion of a beef carcass,
b. subdividing the deboned beef carcass or portion thereof into pieces of beef of from about one-fourth pound to about three pounds each,
c. mixing said pieces of beef in a mechanical mixer with an aqueous curing brine solution in the ratio of about 0.15 pound of curing brine solution per pound

of beef, said curing brine solution being formed by extracting about 100 grams of solid pickling spices with about 2700 grams of water, separating the aqueous extract from the solid pickling spices, mixing the aqueous extract with about 8,650 grams of additional water, about 1815 grams of sodium chloride, about 380 grams of edible phosphate, about 50 grams of sodium nitrate, about 20 grams of sodium nitrite, about 25 grams of sodium ascorbate or ascorbic acid, and about 25 grams of sodium erythorbate, said mixing of said beef and said curing brine solution being continued until said beef is tacky,

d. stuffing the mixture of beef and curing brine into a flexible film container,

e. holding said mixture of beef and curing brine in said flexible film container for about 12 to about 24 hours at from about 2° C. to about room temperature to accomplish thorough curing of said beef by said curing brine, and

f. inactivating the enzymes in said beef by heat treatment of said beef in said flexible film container at a temperature and for a time sufficient to accomplish inactivation of said enzymes.

3,845,228

PROCESS FOR EXTRUDING OIL SEED PROTEIN MATERIAL

William Thomas Atkinson, Decatur, Ill., assignor to Archer Daniels Midland Company, Decatur, Ill.

No Drawing. Filed Mar. 27, 1973, Ser. No. 345,433

Int. Cl. A23j *3/00, 7/00*

U.S. Cl. 426—364 **5 Claims**

1. In the process for preparing an expanded food product by the extrusion of a mixture of solvent extracted oil seed proteinaceous material having a protein concentration of about 40% to about 80% mixed with about 20% to about 60% by weight of water the improvement which comprises extruding such a mixture which additionally contains 0.1% to 2.0% of lecithin based on the dry weight of said mixture.

3,845,229

METHOD OF PREPARING SOYBEAN PRODUCTS FREE OF ANTITRYPSIN

Michel Rambaud, Paris, France, assignor to Societe Industrielle des Oleagineux, Paris, France

No Drawing. Continuation of abandoned application Ser. No. 841,563, July 14, 1969. This application Mar. 27, 1972, Ser. No. 238,712

Int. Cl. A23l *1/20*

U.S. Cl. 426—375 **6 Claims**

1. A method for preparing soybean products free of antitrypsin, comprising crushing unextracted soybeans containing urease, the humidity of the crushed grains being at most 12%, spraying the crushed soybeans with an aqueous solution of urea, the amount of urea being between 0.1 and 0.4 part per 100 of the soybeans by weight, rolling the sprayed soybeans to obtain flakes thereby improving the distribution of urea, the temperature of the soybeans prior to rolling being no higher than 70° C., and then cooking said flakes in steam with the humidity of the flakes being 18–20% at 100–110° C. until destruction of antitrypsin is obtained.

3,845,230

FREEZE CONCENTRATION OF INSTANT COFFEE

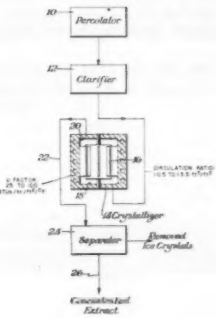
Daniel E. Dwyer, Jr., Westbury, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation of abandoned application Ser. No. 846,805, Aug. 1, 1969. This application Apr. 3, 1972, Ser. No. 240,867

Int. Cl. A23f *1/08;* **B01d** *9/04*

U.S. Cl. 426—384 **10 Claims**

1. A continuous process of freeze concentrating coffee extract in a single pass through a heat exchanger to 35–50% solids content comprising the steps of obtaining relatively unconcentrated coffee extract having a solids content of approximately 20–35% by weight, freezing ice crystals within the body of said extract by slowly continuously feeding the extract at the lower portion of a vertical cylindrical heat exchanger for upward flow therein, the said heat exchanger having a ratio of volume to heat exchanger surface of 1:0.5 to 1:3.5 $ft.^3/ft.^2$ and a height greater than its diameter, and subjecting the extract while it is maintained at or below the ice point thereof to gentle agitation by stirring means in continuous positive scraping contact with a refrigerated heat exchanger wall in an oxygen-free environment under conditions which initially form a nucleating frost on the wall and wherein the frost is thereafter displaced from and thus cleaned from the wall and is redistributed by an agitator blade in the agitated body of extract to assure



gradual development of ice crystals of increasing size over a residence time of at least one hour, thereby providing relatively large and uniform grossly spherical ice crystals ranging approximately from 10 to 80 mils in size in a mother liquor of 35% to 50% solids concentration, said conditions including a "U" factor (B.t.u.'s/hr./$ft.^3$/° F.) of 25 to 100 and a delta T approximately between 25° F. to 60° F. across the heat exchange wall and the extract whereby said crystals and extract rise gradually in the heat exchanger and said ice crystals collect as a floating slurry cap of uniform coarse ice crystals to provide an ice cake of high permeability and porosity for facilitating removal of coffee solids therefrom; continuously removing enriched mother liquor and floating ice at the upper extremity of the heat exchanger; and centrifugally separating the concentrate from said crystallized extract by filtering said concentrated coffee solids through the ice produced.

3,845,231

PROCESS FOR PREPARING A CANNED PRESSURIZED CARBONATED SHERBET-MIX PACKAGE

Taro Nagasawa, Taizo Ryoki, Isao Kiyosawa, Saburo Oizumi, and Yasuo Fukuwatari, Tokyo, Takashi Suzuki, Chiba, Hitoshi Ishibashi, Kawasaki, and Nobuo Kawamura, Tokyo, Japan, assignors to Moringa Milk Co., Ltd.

Continuation-in-part of applications Ser. No. 855,031, Sept. 3, 1969, now abandoned, and Ser. No. 167,579, July 30, 1971, now Patent No. 3,761,285. This application June 23, 1972, Ser. No. 265,691

Claims priority, application Japan, June 30, 1971, 46/47,258

Int. Cl. A23g *5/00;* **A23l** *3/36;* **B65b** *55/00*

U.S. Cl. 426—393 **10 Claims**

1. A process for preparing a pressurized carbonated sherbet-mix package in a can for producing a carbonated

sherbet having a rigid foamy structure of fine ice crystals, comprising the steps of:

preparing a syrupy mix containing as its main component sugar with additives selected from the group consisting of fruit juices, organic acids, milk products and flavorings;

said syrupy mix having a total solids content between about 10% and 20%;

preparing a gum mix of between about 0.05% and 0.20% total solids content, said gum being selected from the group consisting of locust bean gum and guar gum;

mixing said gum mix with an aqueous pasteurized solution of between 0.02 to 0.1% of carrageenan;

pasteurizing and cooling said syrupy mix and partially pre-filling a can therewith;

pasteurizing and cooling said gum mix and dissolving therein carbon dioxide at a pressure of about 0.1 to 2.3 kg./cm.^{2} at 15° C.;

filling the unfilled portion of said can with said gum mix; and

pressure sealing, warming and homogenizing the contents thereof into a homogenized mixture, whereby when the can is frozen and opened under ambient conditions carbonated sherbet rises therefrom in a column expanded to 1.6 to 1.8 times the volume of said mixture.

3,845,232

METHOD FOR MAKING FLAKED CEREALS

Stanley H. Reesman, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed May 27, 1970, Ser. No. 41,098
Int. Cl. A23l *1/10*
U.S. Cl. 426—457 **7 Claims**

1. A process for making a cereal flake of nonuniform thickness from a cooked pellet of the cereal comprising mechanically pressing the cereal pellet to form a flake containing discrete and distinct sections of different thickness, and toasting said product without substantial puffing; said flake containing thin sections of a membrane capable of dissolving in milk in a period of up to three minutes.

ELECTRICAL

ERRATUM

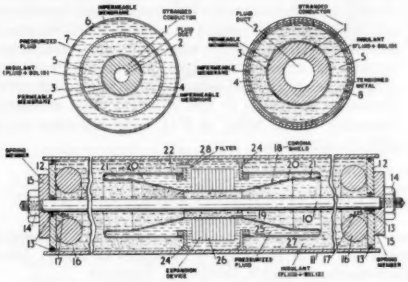
For Class 84—1.01 see:
Patent No. 3,844,379

3,845,233

PRESSURIZED INSULANT OF SOLID AND FLUID FOR A CONDUCTOR

Edward Arthur Burton, Guildford, England, assignor to Dielectrics International Limited, London, England

Filed Feb. 12, 1973, Ser. No. 331,775
Int. Cl. H01b *7/02, 17/26*
U.S. Cl. 174—24 **11 Claims**



1. Electrical equipment comprising:

a conductive member; an insulant surrounding said conductive member; said insulant comprising finely divided particles of a solid insulating material in an insulating fluid, said insulating fluid acting as a discharge suppressant; first pressure applying means for applying pressure to said insulating fluid to maintain said insulating fluid at above atmospheric pressure, said first pressure applying means including a fluid passage means for placing the insulating fluid in fluid flow communication with a source of pressurized fluid, said fluid passage means being permeable to said insulating fluid and impermeable to said solid insulating material; and second pressure applying means for applying pressure to said solid insulating material to maintain interparticle pressure to inhibit particle movement and prevent particle sedimentation and thereby maintain the insulating fluid as a thin film.

3,845,234

MEANS FOR PROTECTING ELECTRICAL RECEPTACLES

Stanley S. Brenner, Massapequa, N.Y., assignor to Perfect Line Manufacturing Corp., Lindenhurst, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,508
Int. Cl. H05k *5/03*
U.S. Cl. 174—67 **6 Claims**

1. A conventional electrical socket of the type having a conventional faceplate with openings, said socket having apertures to receive prongs of an electrical plug,

the socket extending through the openings in said faceplate,

a removable resilient gasket mounted over said conventional socket and extending through said faceplate openings under said faceplate,

said gasket having self-sealing slits in front of said apertures, whereby an electrical plug may be inserted through said slits into said socket,

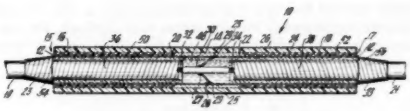
and when said plug is withdrawn, said slits will seal themselves, said gasket being removably sandwiched between said socket and said faceplate.

3,845,235

PREFABRICATED CAPACITIVE GRADED SPLICE DEVICE

George Bahder, Suffern, and Carlos Katz, Spring Valley, both of N.Y., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,113
Int. Cl. H02g *15/08;* **H01g** *3/17*
U.S. Cl. 174—73 R **4 Claims**



1. A capacitive graded splice device for joining the ends of two high voltage cables each having a central conductor and an outer shield, said device comprising:

a non-conducting rigid supporting sleeve having an inner diameter larger than the outer diameter of the cables to be joined;

an electrically conducting equipotential shielding ring concentrically mounted around the supporting sleeve at the longitudinal center thereof, the supporting sleeve having at least one slot therethrough under the equipotential shielding ring;

a cable connector positioned within the supporting sleeve at the longitudinal center thereof for electrically connecting the central conductors of the two cables to be joined;

electrically conducting electrostatic connector means extending from the cable connector to the equipotential shielding ring through the slot or slots in the supporting sleeve;

a pair of capacitive graded sections formed from alternating layers of helically wound capacitive tapes and insulating tapes, the sections concentrically mounted around the supporting sleeve adjacent both ends of the equipotential shielding ring, the capacitor elements of the sections located at the end of each of the sections adjacent the equipotential shielding ring being electrically connected to it;

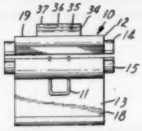
a cylindrical insulating member concentrically mounted around the capacitive graded sections and the equipotential shielding ring; and

an electrically conducting metallic shield concentrically mounted around the cylindrical insulating member for connection to the outer shields of the cables to be joined, the electrically conducting metallic shield being connected to the capacitor elements located at the end of each of the capacitive graded sections remote from the equipotential shielding ring.

3,845,236
WIRE CONNECTOR

Gail A. Anderson, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 372,065, June 21, 1973, abandoned. This application Mar. 4, 1974, Ser. No. 447,478
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 R **6 Claims**

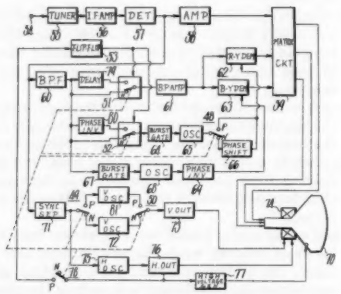


1. A wire-connector comprising a folded slotted spring compression reserve contact element slidably retained within an insulating body having upper and lower body sections opposingly channeled to receive a pair of insulated electrical conductors, said sections being hingedly interconnected along their back edges, and a cover member hingedly connected to said body for fitting beneath said lower section and across the free front edges of said upper and lower sections, and wherein said lower section has a flat base defining a first plane, said upper section having a top surface defining a pair of planes intersecting at a peak midway above said channels, the one of said planes extending toward the free edge of said section being at an acute angle with said first plane.

3,845,237
SYSTEM FOR RECORDING AND/OR REPRODUCING COLOR TELEVISION SIGNALS

Kiyoshi Yamakawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 327,614
Int. Cl. H04n *9/02, 5/78*
U.S. Cl. 178—5.4 CD **15 Claims**



1. A system for selectively recording and/or reproducing NTSC and PAL color television signals respectively having first and second different standard field frequencies and first and second different standard color subcarrier frequencies of the chrominance signal portions thereof, comprising

a. rotary magnetic head means for selectively recording and reproducing signals on a magnetic tape;

b. means for selectively rotating said head means at speeds respectively corresponding to said first and second different field frequencies of the NTSC or PAL signals to be recorded and/or reproduced;

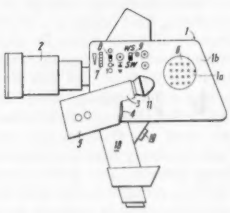
c. recording circuit means including reference signal generating means operable to selectively produce first and second reference signals having respective frequencies that differ from each other by the difference between said first and second standard color subcarrier frequencies, frequency-converting means receiving said chrominance signal portion of the NTSC or PAL color television signal to be recorded and a corresponding selected one of said first and second reference signals for frequency-converting the color subcarrier frequency of said chrominance signal portion to a first predetermined subcarrier frequency that is lower than the standard color subcarrier frequency of either of said signals to be recorded, and means for applying the frequency-converted chrominance signal portion to said head means for recording by the latter on the magnetic tape; and

d. reproducing circuit means including reference signal generating means operable to produce a third reference signal, and frequency-reconverting means receiving said third reference signal and the chrominance signal portion reproduced from the tape by said head means and reconverting the color subcarrier frequency of said reproduced chrominance signal portion to a second predetermined subcarrier frequency, whereby the frequency-reconverted chrominance signal portion has its original field frequency and said second predetermined subcarrier frequency regardless of said standard color subcarrier frequency of the NTSC or PAL color television signal prior to recording.

3,845,238
PORTABLE TELEVISION CAMERA WITH AUDIO COMMUNICATION

Hans-Dieter Schneider, Gross-Gerau, and Horst Bachmann, Darmstadt, both of Germany, assignors to Robert Bosch Fernsehanlagen GmbH, Darmstadt, Germany

Filed Apr. 5, 1973, Ser. No. 348,157
Claims priority, application Germany, Apr. 7, 1972, 221668
Int. Cl. H04n *5/26*
U.S. Cl. 178—5.8 R **14 Claims**



1. In a television camera, particularly in a portable color television camera, a combination comprising a first housing; a picture taking lens mounted on said first housing; a second housing connected to said first housing; view finder means mounted in said second housing; and a pair of electroacoustic transducers for enabling the operator to communicate with a control center, one of said transducers being mounted in said first housing and the other of said transducers being mounted in said second housing.

3,845,239
COMBINED FACSIMILE RECEIVING AND SENDING UNIT

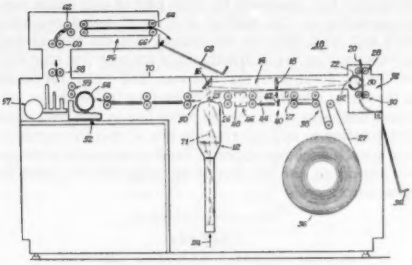
Daniel B. Granzow, Arlington Heights; William R. Maloney, Deerfield, and William B. Miles, Arlington Heights, all of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed June 16, 1969, Ser. No. 833,309
Int. Cl. H04n *1/02, 1/04*
U.S. Cl. 178—6 **17 Claims**

1. In a transceiver device for transmitting data signals corresponding to data on the surface of a document to a remote receiver,

an elongated light collecting tube having a pair of aligned slit openings extending laterally along and spaced 180° from each other about said tube, a reflective interior surface, and an open end,

means for moving a document along the outer wall of said tube opposite a first one of said slits and transverse to both the first slit and the direction of elongation of the tube,



means for projecting a scanning beam of light through the first and second ones of the slit openings onto the data bearing surface of said document, so that a pattern of light and shadow is reflected from the document back through said first slit opening into said tube,

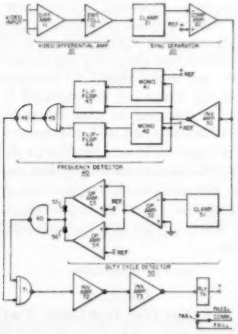
and light responsive means mounted in the open end of said tube for receiving said reflected pattern and in response thereto producing data signals transmittable to said remote source.

3,845,240

SYNC PULSE DETECTOR FOR VIDEO TELEPHONE SYSTEM

Jamil K. Alaily, La Grange, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 16, 1972, Ser. No. 298,154
Int. Cl. H04n *5/08*
U.S. Cl. 178—7.3 S **11 Claims**



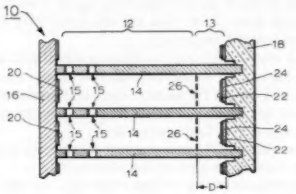
1. A video signal sync pulse detector including: sync pulse separating means connected to a source of composite video signals operated in response to detection of pulses included in said video signals to generate sync pulses of a predetermined polarity and of a fixed amplitude at the same frequency and same width as said detected pulses; frequency detecting means connected to said pulse separating means, operated in response to said sync pulses generated by said separating means being within predetermined frequency limits to generate a first output signal; duty cycle detecting means connected to said pulse separating means, operated in response to said pulses generated by said separating means being within predetermined duration limits to generate a second output signal; first gating means connected to said frequency detecting means and to said duty cycle detecting means, operated in response to both said first and second output signals in combination, to generate a third output signal; an output means connected to said first gating means operated in response to said third output signal to provide an indication of the presence of sync pulses of correct frequency and correct duration in said composite video signals.

3,845,241

TELEVISION DISPLAY PANEL HAVING GAS DISCHARGE CATHODO-LUMINESCENT ELEMENTS

James W. Schwartz, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 2, 1973, Ser. No. 328,979
Int. Cl. H05b *37/00*
U.S. Cl. 178—7.3 D **15 Claims**



1. A cathodo-luminescent device comprising:

wall means defining an enclosure for receiving an ionizable gas at a predetermined pressure, said wall means having opposed first and second ends; pg,21

cathode means disposed at said first end of said enclosure and adapted to have a voltage V_0;

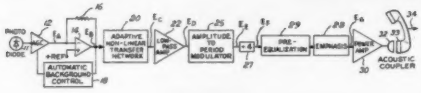
high voltage anode means disposed at said second end of said enclosure and adapted to receive a relatively high accelerating voltage V_2;

phosphor means disposed at said high voltage anode means for emitting light when bombarded by high energy electrons accelerated to said high voltage anode means; and discharge anode means adapted to receive an applied voltage V_1 substantially lower than said accelerating voltage V_2, $V_2 - v_1$ being of a predetermined magnitude effective to accelerate free electrons to energy levels capable of exciting said phosphor means to emit light, $V_1 - V_0$ being of a predetermined magnitude effective to support a gas discharge between said cathode means and said discharge anode means, said discharge anode means being disposed directly between said first and second ends of said enclosure and spaced from said high voltage anode means a predetermined distance which is insufficient, considering said gas pressure and said voltage difference $V_2 - V_1$ between said high voltage anode means and said discharge anode means to support a gas discharge therebetween, said discharge anode means defining electron-transmissive openings for permitting free electrons generated in a discharge established between said cathode and said discharge anode means to pass through said discharge anode means and to be accelerated by said high voltage anode means into impingement with said phosphor means.

3,845,242
VIDEO SIGNAL PROCESSING SYSTEM FOR FACSIMILE TRANSMISSION

William E. Richeson, Jr., and Robert H. Dreisbach, both of Fort Wayne, Ind., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 21, 1972, Ser. No. 308,552
Int. Cl. H04n 1/32
U.S. Cl. 178—6 10 Claims



1. In combination,

means for converting image information into a time-varying electrical baseband signal,

a non-linear transfer network for reshaping the waveform of said baseband signal to produce a modulating signal having limits between a first signal level representing black and a second signal level representing white, said network including means for increasingly shifting the short-term average level of said modulating signal toward said first level and away from said second level with increasing baseband signal frequency;

means for translating said modulating signal into a message signal having an instantaneous frequency which varies between an upper frequency when said modulating signal is at said first level, to a lower frequency when said modulating signal is at said second level;

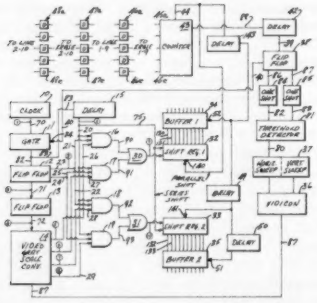
means for transmitting said message signal over a communication channel to a receiving station; and

means at said receiving station responsive to said message signal for reproducing said image information.

3,845,243
SYSTEM FOR PRODUCING A GRAY SCALE WITH A GASEOUS DISPLAY AND STORAGE PANEL USING MULTIPLE DISCHARGE ELEMENTS

Larry J. Schmersal; Theodore C. Baker, and Ellsworth M. Murley, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 28, 1973, Ser. No. 336,598
Int. Cl. H04n 5/66
U.S. Cl. 178—7.3 D 5 Claims

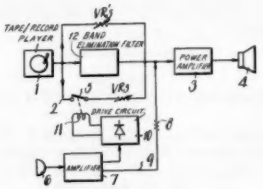


1. A system for producing a gray scale in a cross conductor gas discharge storage and display panel having discharge regions, each discharge region including a plurality of storage and discharge areas disposed laterally across said panel which correspond to the crossing areas of said conductors, comprising; means for scanning an image field and producing an image signal corresponding thereto, means for defining a plurality of discrete gray level signal magnitudes which correspond to a plurality of discrete gray level magnitudes which said image signal exceeds, means for generating a number of information bits from the part of said image signal corresponding to each image element of said image field, the number of information bits generated for each part of said image signal corresponding to the highest gray level signal magnitude which said level detector determines that the part exceeds, means for storing the information bits for each line scanned at least for the duration of that line scan, and means for reading out the stored information bits for exciting the discharge areas of each discharge region of the panel line by line with signals corresponding to said information bits so that the number of areas in each discharge region excited corresponds to the gray level associated with the part of the image field to which that region corresponds.

3,845,244
SOUND SIGNAL CHANGING CIRCUIT

Hiroshi Yonezu, Tokushima-ken, Japan, assignor to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd), Tokyo, Japan

Filed Aug. 1, 1972, Ser. No. 276,945
Claims priority, application Japan, Aug. 11, 1971, 46-60802
Int. Cl. H04r 27/00, 3/00
U.S. Cl. 179—1 VC 15 Claims



1. A circuit for eliminating a selected band of audio frequencies from an audio spectrum and inserting another audio signal into said selected band comprising, an input terminal receiving an audio signal, a band elimination filter connected to said input terminal and removing a selected band of audio frequencies from said audio signal, an intermittent source of audio signals having frequency components in said selected band, a rectifier connected to said intermittent source to develop a control signal when said intermittent signal is present, a solenoid connected to said rectifier, a switch connected in parallel with said band elimination filter and controlled by said solenoid so that said switch is open in the presence of said intermittent signal and a speaker connected to said intermittent source of audio signals and to the output of said band elimination filter.

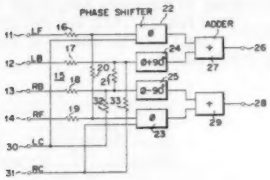
3,845,245
ENCODING SYSTEM FOR FORMING TWO-CHANNEL SIGNALS FROM A PLURALITY OF SOUND SIGNALS

Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Co., Tokyo, Japan

Filed Nov. 9, 1973, Ser. No. 414,512
Claims priority, application Japan, Dec. 29, 1972, 47-2774
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ 6 Claims

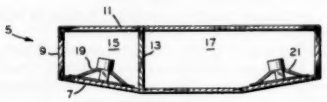
1. An encoding system in which at least first to fourth sound signals desired to be coupled mainly to first to fourth loudspeakers surrounding a listener are utilized in forming first and second channel signals, and first and second sound signals are

coupled to the first channel in large and small proportions respectively with a reference phase shift amount, second and first sound signals are coupled to the second channel in large and small proportions respectively with the reference phase shift amount, third and fourth sound signals are coupled to the first channel in large and small proportions respectively with a phase shift amount of the reference phase shift amount plus 90°, and the fourth and third sound signals are coupled to the second channel in large and small proportions with a phase shift amount of the reference phase shift amount minus 90°, the improvement comprising means for coupling a fifth sound signal de.ired to have its sound image localized between said first and third loudspeakers to the first channel in a large



proportion with the reference phase shift amount; means for coupling said fifth sound signal to the second channel in a small proportion with a phase shift amount having substantially 90° phase difference with respect to the reference phase shift amount; means for coupling a sixth sound signal desired to have its sound image localized between the second and fourth loudspeakers to the second channel in a large proportion with the reference phase shift amount; and means for coupling said sixth sound signal to the first channel in a small proportion with a phase shift amount having substantially 90° phase difference with respect to the reference phase shift amount.

3,845,246
SPEAKER SYSTEM
John Michael Ouvrier, Sylmar, Calif., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Mar. 28, 1973, Ser. No. 345,654
Int. Cl. H04r *1/28*
U.S. Cl. 179—1 E **3 Claims**



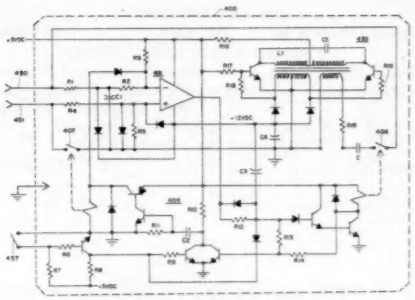
1. In a high fidelity sound reproduction system, a single channel loudspeaker system comprising:

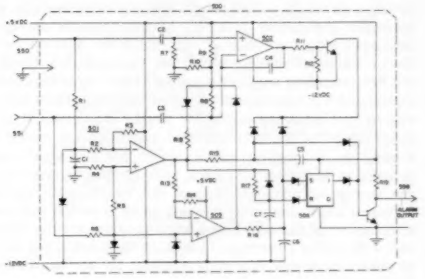
an air-sealed cabinet forming an air-sealed enclosure;

divider means disposed within said air-sealed enclosure and affixed to provide first and second air-sealed compartments, said first and second compartments having unequal volumes and each having a resonance in the range of between 30 and 40 Hz.; and

loudspeaker means including a pair of similar loudspeakers electrically coupled in parallel with each loudspeaker disposed within and affixed to one of said first and second compartments.

3,845,247
SIGNAL TRANSMISSION AND SURVEILLANCE SYSTEM USING AN OPERATIONAL TELEPHONE LINE
John J. Jurschak, 825 Casazza Dr., Reno, Nev. 89502
Filed May 15, 1973, Ser. No. 360,604
Int. Cl. H04m *11/00*
U.S. Cl. 179—5 R **6 Claims**





1. An electronic signal transmission system comprising a first unit, said first unit comprising a transmitter, a second unit, said second unit comprising a receiver matched to said transmitter, a telephone transmission line having two wires, conductive means connecting said first unit to said telephone line, conductive means cooperatively connecting said second unit to said telephone line, a telephone, a telephone exchange, said telephone line connecting said telephone and said telephone exchange, said telephone and said telephone line and said telephone exchange together defining a telephone system, said telephone exchange causing a DC bias current on said telephone line when said telephone is electrically connected to said line sufficient for message transmission between said telephone and said exchange, normal current on said telephone line which is not caused by said signal transmission system being telephone system current, said first and second units being of sufficiently high resistance so as to substantially reduce DC loading of said line, said first and second units of sufficiently high and balanced impedance to telephone system AC voltage on said line as to substantially reduce attenuation of said voltage and unbalancing of said line by said telephone system AC units, said first and second units comprising means to detect the state of said telephone system, said transmitter comprising audio-signal means for modulating said telephone line voltage, said first unit being adapted to receive an event signal, said transmitter modulating the voltage of said line in accordance with said telephone system state and said event signal in a way which is discernible to said receiver, said receiver sensing said modulated telephone line voltage, said second unit transforming said modulation into an output signal, said output signal being electrically connectable to a suitable means for utilization.

3,845,248
TELEPHONE AUTO-ANSWERING DEVICE WITH RECORD MEDIUM SUBSTITUTION

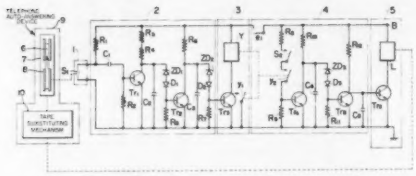
Shizuo Ando, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 315,968

Claims priority, application Japan, Dec. 16, 1971, 46-102143

Int. Cl. G11b *15/06*

U.S. Cl. 179—6 R **10 Claims**



1. A control apparatus for a telephone auto-answering device having a caller's message recording mechanism which records the message on a first recording medium and also having a means for substituting a new recording medium, said apparatus comprising detecting means operable during an auto-answering operation of the telephone auto-answering device for determining whether the non-recorded length of the first recording medium is sufficient for recording another message of a predetermined duration; memory means responsive to said detecting means for storing the detection of an insufficiency of the non-recorded length; switch means for sensing the hanging up of the caller; and a control means coupled to said memory means, and operable in response to the storage of the detection of the insufficiency of non-recorded length and to the hanging up by the caller indicating termination of the auto-answering operation and the recording of the caller's message, to actuate the substituting means to substitute a new recording medium for the substantially fully recorded first medium.

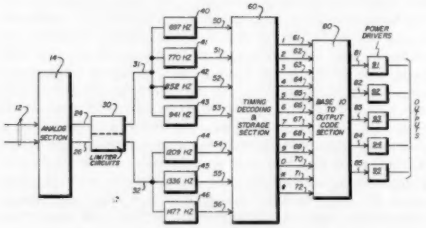
3,845,249
MULTI-FREQUENCY RECEIVER

Daniele Sellari, Jr.; Henry A. Richard, both of Corinth, Miss., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 9, 1973, Ser. No. 339,562

Int. Cl. H04m *1/50*; **H04q** *9/12*

U.S. Cl. 179—84 VF **6 Claims**



1. A multi-frequency receiver for receiving individual frequency tones comprising; a plurality of band pass filters each selective of a different frequency, said filters being grouped into a first and a second group, means for temporarily storing signals passed by said filters, validating means receptive to signals from said filters to include means for summing the signals received from each group and means responsive to the summed signal exceeding a predetermined threshold level for emitting a timing start signal which causes the temporary storage of the signals passed by said filters in said storage means, timing means responsive to said timing start signal for timing the duration of signals received by said summing means, and output means operative after the termination of said frequency signals to said filters and the receipt of the validity control signal from said timing means for causing the transmission of the temporarily stored signals from the storage means to a decoding device.

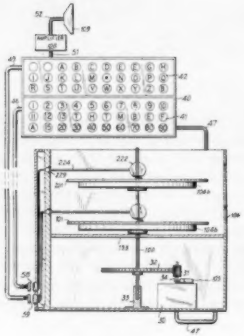
3,845,250
MANUAL KEY OPERATED MESSAGE GENERATOR

Gerard O'Brien, 33 Pampapra Ave., Jersey City, N.J. 07307

Filed Feb. 22, 1972, Ser. No. 227,759

Int. Cl. G11b *3/04*, *3/78*, *3/80*

U.S. Cl. 179—100.4 R **4 Claims**



1. In a manually operated device having a frame for the generation of audible messages from pre-recorded sound components, comprising in combination:

a keyboard having a plurality of keys each bearing an indicia;

recorded means in the form of one or more bodies of revolution carrying on the surfaces thereof a multiplicity of pre-recorded message elements in parallel, finite arcuate tracks on at least one side of said recorded means;

shaft means, rotatively supported by bearing means in said frame, for supporting said recorded means about its rotational axis of generation in said frame;

means for restraining relative rotational motion as between said recorded means and said shaft means;

drive means for impelling the rotational motion of said shaft means at a uniform velocity and co-operatively associated brake means, for normally arresting rotational motion of said shaft means of said recorded means;

a plurality of transducer means, each one of said transducer means being in permanent alignment with one of said tracks for reading said pre-recorded message elements on said track and converting same into electrical signals of fluctuating intensity;

amplifying means for said signals of fluctuating intensity;

broadcast means for the conversion of said signals of fluctuating intensity to audible sound;

control means, including a plurality of switching elements having contact means, for controlling signals transmitted to said brake means, whereby upon sequentially depressing manually selected keys having the desired indicia to be broadcasted as sequential audible message elements, said brake means is released upon each depression of a single key thereby permitting rotation of said recorded

means, and upon the manual release of each of said depressed keys said brake means is re-engaged to stop said rotation; and

each of said message elements occupying substantially less then said full arcuate tracks so as to enable the manual release of said depressed key within the completion of one single revolution of said recorded means.

3,845,251

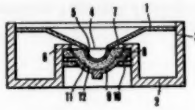
IMPROVED ACOUSTIC-ELECTRO CONVERTING DEVICE HAVING SEMICONDUCTOR GRANULES

Toru Takagi; Osamu Ochi, and Yoshihiko Mizushima, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Division of Ser. No. 210,800, Dec. 22, 1971. This application Apr. 18, 1973, Ser. No. 352,469

Int. Cl. H04r *21/00*

U.S. Cl. 179—122 **9 Claims**



1. An acoustic-electro converting device comprising a diaphragm, a moving electrode secured to said diaphragm, a fixed electrode spaced from said moving electrode and defining a chamber between said moving and fixed electrodes, semi-conductor granules packed in said chamber, said semiconductor granules being made of an alloy consisting of from 10 to 95 atomic weight percent of selenium and from 5 to 90 atomic weight percent of tellurium and granulated into granules having diameters of the order of from 0.1 to 0.4 mm, the semiconductor granule packed chamber defined by said spaced-apart moving and fixed electrodes having a configuration and size such that it exhibits an alternating current resistance ranging in value from 90 ohms to 3.2 kiloohms upon energization with a small DC current of the order of 5 milliamperes supplied across the spaced-apart electrodes.

3,845,252

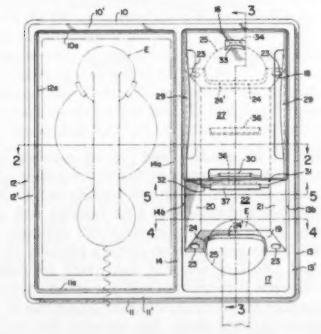
WALL TELEPHONE FRAME AND HOLDER

Dwight N. Wooters, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Apr. 26, 1973, Ser. No. 354,675

Int. Cl. H04m *1/04*

U.S. Cl. 179—146 R **6 Claims**



1. A frame for a wall telephone having rectangularly arranged walls defining an opening for surrounding the telephone and forming a holder frame at one side of said opening, a writing pad holder detachably mounted in said holder frame, and a cradle within said holder frame adjacent said writing pad holder and adapted to hold the telephone handset when detached from the telephone.

3,845,253

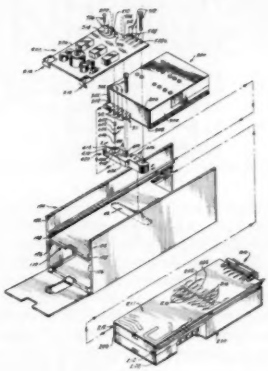
INTERCONNECTING ASSEMBLY

Thomas W. Hanneman, Fountain Valley, and Jeffrey A. Cook, Los Angeles, both of Calif., assignors to Communication Mfg. Co., Long Beach, Calif.

Filed Oct. 18, 1972, Ser. No. 298,557

Int. Cl. H05k *1/04*; **H04m** *1/00*

U.S. Cl. 179—179 **10 Claims**



1. An electrically interconnected assembly comprising:

a. a housing comprising:

a pair of interior opposing walls, and

a connecting plate interconnecting said walls and having an opening therein;

b. a first electrical modular unit mounted between said sides and having a side facing one side of said connecting plate, said side having at least one exposed conductive circuit thereon;

c. a second electrical modular unit mounted on the other side of the connecting plate and having a side comprising thereon exposed conductive circuits facing said opening and at least one opening extending into the second unit through one of said conductive circuits thereon;

d. an insulating block positioned in said connecting plate opening and having passages therethrough; and

e. a connecting assembly comprising:

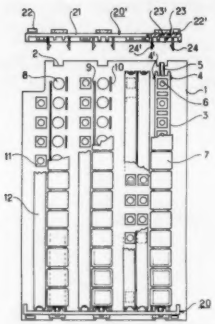
an electrically conductive member elongated between two ends and having a first portion extending into said opening in said second unit and a second portion extending through a first one of said passages in said insulating block to one end of the conductive member which engages at least one of said conductors on said second unit;

an electrically conductive shoulder electrically and mechanically connected to said conductive member in between said second unit and insulating member, and an electrically conductive spiral compression spring surrounding said first member portion from a first end of the spring that engages the exposed conductor surrounding said opening on said second unit to a second end of the spring that engages said shoulder.

3,845,254
PRESS-BUTTON PANEL ARRANGEMENT FOR PRINTED CIRCUIT CARD

Gilbert Schneider, Strasbourg, France, assignor to La Telephonie Industrielle et Commerciale "Telic", Strasbourg-Meinau, France

Filed Sept. 7, 1973, Ser. No. 395,192
Claims priority, application France, Sept. 7, 1972, 72.31790
Int. Cl. H01h *3/12*
U.S. Cl. 200—5 A **7 Claims**

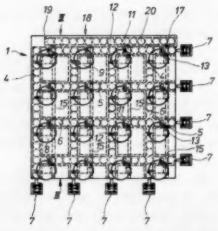


1. Press-button panel having a matrix configuration, comprising a printed circuit plate, a plurality of beam-shaped parts mounted in parallel on said printed circuit plate, a plurality of push-button assemblies mounted in each beam-shaped part, first and second resilient means in the form of elongated ribs, securing all of the ends of said beam-shaped parts on one side to one another and securing all the ends of the beam-shaped parts on the opposite side to one another, respectively, said ribs including projection means engaging peripheral notches on the said printed circuit plate securing said ribs to said printed circuit plate and a plurality of clips, said beam-shaped parts being provided with clipping devices engaged by said clips to secure said ribs to said beam-shaped parts.

3,845,255
KEYBOARD SWITCH ASSEMBLY WITH BALL AND SLIDER INTERLOCK MECHANISM

Alfred Zielke, Vohrum, Germany, assignor to Elmeg Electro-Mechanik GmbH, Peine, Germany

Filed Dec. 19, 1973, Ser. No. 426,364
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 EA **7 Claims**



1. In a keyboard having a plurality of keys arranged in a matrix and wherein a plurality of individual displaceable elements are arranged in intersecting rows and columns for displacement along the rows and columns upon actuation of individual ones of the keys, the keys being arranged in positions corresponding to the intersections of the rows and columns of displaceable elements so that upon displacement of a key the elements in the respective row and the elements in the respective column intersecting in the intersection associated with the key are being displaced, there being switching means associated with the rows and columns of elements and actuated upon displacement of the elements in the respective rows and columns, the improvement comprising:

an additional row of displaceable elements arranged alongside one said rows and arranged for limited displacement only of the elements of the additional row; and

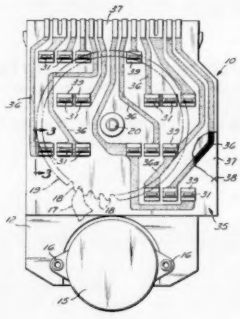
plural slide means, respectively associated with said columns and operatively coupled to the keys so that one slide means of the plurality is displaced upon depression of a key pertaining to the column with which the one slide means is associated,

each slide means when displaced locking the elements of the additional row, so that the elements of the additional row inhibit displacement of the remaining slide means of the plurality thereby inhibiting depression of any key of the respective other columns.

3,845,256
CAM-OPERATED TIMER SWITCH ASSEMBLY WITH IMPROVED FLEXIBLE, PRINTED CIRCUIT TERMINAL CONNECTORS

James D. Edwards, Russiaville, Ind., assignor to Scott & Fetzer Company, Lakewood, Ohio

Filed Dec. 10, 1973, Ser. No. 423,103
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 R **7 Claims**



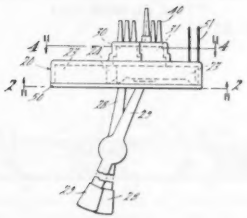
1. Apparatus for opening and closing multiple electrical circuits in predetermined timed relation comprising a housing, a disc rotatably mounted within said housing and having a cam face spaced from and parallel to a flat housing wall, said cam face having a plurality of concentrically disposed, radially spaced cam tracks in a common plane, a plurality of switches between said cam face and said wall which are opened and closed in response to rotation of said disc about an axis normal to said cam face and in predetermined sequential or simultaneous manner by said cams, the opposite side of said flat housing wall carrying a plurality of flat conductors lying in a common plane, each of a plurality of said conductors being electrically connected at one end to at least one switch termi-

nal and all of a plurality of said conductors terminating at their respective other ends in parallel alignment and at an edge of said housing for connection to other circuitry.

3,845,257
ELECTRICAL AND FLUID SWITCH WITH CROSSING SLIDE CHAMBERS

Theodore E. Fiddler, 1268 Suffield Dr., Birmingham, Mich. 48009, and Arnold G. Adams, Troy, Mich., assignors to said Fiddler, by said Adams

Continuation-in-part of Ser. No. 315,106, Dec. 14, 1972. This application Mar. 29, 1973, Ser. No. 345,977
Int. Cl. H01h *3/04, 9/26*
U.S. Cl. 200—61.86 **3 Claims**



1. A control device comprising,

a case having a front wall, opposite end walls, and opposite top and bottom walls; said case walls having interior surfaces defining an interior linear slide chamber in said case; said front wall having an opening therein intermediate said end walls and extending toward said top and bottom walls;

a housing on said front wall overlying said opening in said case front wall; said housing having a face wall, opposite side walls, and opposite upper and lower walls; said housing walls having interior surfaces defining an interior cross-slide chamber in said housing relative to said linear slide chamber in said case;

a cross-slide in said housing in sliding contact with said housing side walls and in spaced relationship to said housing upper and lower walls for movement toward and away from said upper and lower walls of said housing;

a cam on said cross-slide extending into said case;

a linear slide in said case in sliding contact with said case top and bottom walls and in spaced relationship to said case end walls for movement toward and away from said end walls of said case;

said linear slide abutting said cross-slide to position said cross-slide in said housing;

said linear slide having a cam track receiving and engaging said cam on said cross-slide so that linear movement of said linear slide between said case end walls effects transverse movement of said cross-slide between said housing upper and lower walls,

a back wall on said case in sliding contact with said linear slide containing said linear slide in said case;

means on said back wall for moving said linear slide to selected positions between said case end walls;

FPF ports in said face wall of said housing,

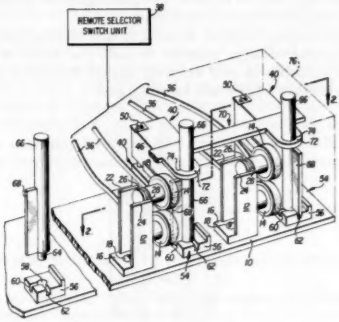
attaching means surmounting said ports for connecting said ports to FPF supply and use; and

a channel maze switch-valve on said cross-slide facing said ports for selectably interconnecting and blocking fluid communication between said ports relative to FPF supply and use coordinated with the position of said cross-slide in said housing.

3,845,258
PNEUMATIC-ELECTRIC SWITCH APPARATUS WITH LOCK-OUT FEATURE

John F. Bruels, R.F.D. 1, Danielson, Conn. 06239

Filed May 11, 1973, Ser. No. 359,603
Int. Cl. H01h *35/32, 35/34*
U.S. Cl. 200—81 H **5 Claims**



1. In a fluid pressure actuated electrical switching apparatus:

A. a switch having:
  i. a mounting support; and
  ii. an elongated resilient arm for actuation of said switch;

B. an expandible fluid pressure actuator operable to displace said arm to thereby actuate said switch;

C. said actuator including:
  i. a cylindrical base section having a portion of reduced diameter intermediate the ends thereof;

D. a support for said actuator including:
  i. a base support plate;
  ii. horizontally spaced upstanding walls on said base support plate defining therebetween a vertical slot having a width less than the diameter of said cylindrical base section of said actuator and greater than that of said reduced diameter portion;

E. said reduced diameter portion of said actuator being engaged in said vertical slot and mounting and supporting said actuator in operable juxtaposition to said arm for actuation therethrough of said mounted switch upon operation of said actuator; and

F. stop means having selective active and inactive positions mounted adjacent said arm and operable upon movement to one or the other of said positions to selectively permit or prevent displacement of said arm by said actuator and thereby selectively control operation of said switch.

3,845,259
FLOW CONTROLLED SWITCH, OPERATED BY A PIVOTAL SHAFT

Robert Spurr, West Hartford, Conn., assignor to Notifier Company, Lincoln, Nebr.

Filed May 11, 1973, Ser. No. 360,405
Int. Cl. H01h *35/40*
U.S. Cl. 200—81.9 R **11 Claims**

1. Mechanism for detecting flow in a fluid carrying conduit having an aperture therein, said mechanism comprising:

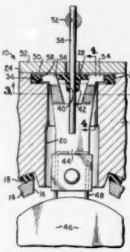
a housing adapted for securement to the conduit in overlying, sealing relationship to said aperture and having an opening in a side of the housing;

a switch disposed exteriorly of said side of the housing for indicating flow through the conduit when actuated;

flow detecting means adapted for insertion in the conduit and shiftable in response to fluid flow therethrough, said flow detecting means extending into said housing and including a shaft extending exteriorly of the housing through said opening therein with an outer portion of said shaft located in engaging relationship with said switch to actuate the latter;

a resilient member at said side of the housing closing said opening and sealingly engaging said shaft, said member having a pair of aligned, elongated grooves spaced apart on opposite sides of said shaft;

a rigid backup element secured to said housing and overlying said resilient member to hold the latter in sealing relationship in said opening against hydraulic pressure developed within said housing; and



an arm located within the housing and secured to said shaft, said arm including a pair of projections disposed on opposite sides of said shaft and spaced therefrom, said projections having knife edges movably received within said grooves and in a close fitting relationship therewith resulting in corresponding low friction pivotal movement of said arm relative to said backup element, said projections further cooperating with said resilient member to allow limited pivotal movement of said shaft about said knife edges to actuate said switch while resisting movement of said shaft other than said pivotal movement thereof upon shifting of said flow detecting means in response to flow in the conduit.

3,845,260

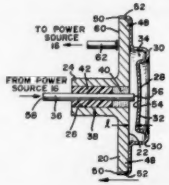
PRESSURE SENSING SWITCH WITH MOVABLE CONTACT DIAPHRAGM

Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 278,503, Aug. 7, 1972. This application May 9, 1973, Ser. No. 358,761

Int. Cl. H01h *35/34*

U.S. Cl. 200—83 N **4 Claims**



1. Pressure sensing means comprising:

a. a single substantially rigid, electrically conductive supporting member having inner and outer faces;

b. a pressure responsive, electrically conductive diaphragm having a portion in sealing engagement with said supporting member and the remaining portion spaced from the inner face thereof, said diaphragm and said inner face defining a hollow compartment having an evacuated state;

c. an integral contact member of substantially constant diameter extending through said supporting member and partially into said hollow compartment, said contact member having a face engaging the inner face of said diaphragm upon application of pressure to the outer face of said diaphragm; and

d. insulating and sealing means disposed between said contact member and said supporting member for insulating said contact member from said supporting member and effecting an air tight seal therebetween so as to maintain said hollow compartment in said evacuated state.

3,845,261

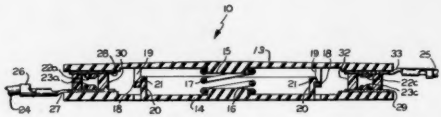
OCCUPANT SENSOR SEAT SWITCH WITH DEFORMABLE CONDUCTIVE SPACER PADS

Paul J. Blinkilde, Lathrup Village, Mich., assignor to Essex International Inc., Fort Wayne, Ind.

Filed May 24, 1973, Ser. No. 363,402

Int. Cl. H01h *3/02*

U.S. Cl. 200—85 A **4 Claims**



1. A pressure sensitive switch, comprising:

rigid, electrically nonconductive cover and base members;

spring means for urging said cover and base members apart;

locking means for locking said cover and base members together, said locking means allowing said cover and base members to move toward and away from one another but preventing separation thereof;

a first pair of opposed, integral bosses on said cover and base members to limit the extent of movement of said cover and base members toward one another;

a first tubular, resilient, elastomeric pad situated between said cover and base members with said first pair of integral bosses extending axially into said pad, said first pad having a plurality of electrically conductive particles dispersed throughout and being electrically nonconductive when uncompressed and electrically conductive when compressed;

first electrical conductor means carried by said base member for making electrical contact to a first side of said first pad; and

second electrical conductor means carried by said cover member for making electrical contact to a second side of said first pad.

3,845,262

CONTACT STRUCTURES FOR VACUUM-TYPE CIRCUIT INTERRUPTERS HAVING CANTILEVERED-SUPPORTED ANNULARLY-SHAPED OUTER ARC-RUNNING CONTACT SURFACES

Richard L. Hundstad, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 3, 1972, Ser. No. 249,991

Int. Cl. H01h *33/66*

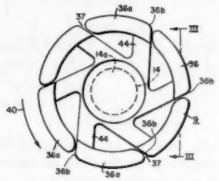
U.S. Cl. 200—144 B **8 Claims**

1. An alternating-current electric circuit interrupter of the vacuum-type comprising, in combination:

a. a first ring-shaped electrode having a segmented ring-shaped contact-engaging surface;

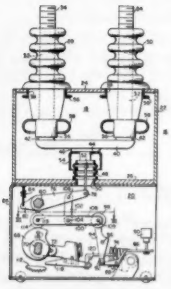
b. a second ring-shaped electrode having a segmented ring-shaped contact-engaging surface;

c. an evacuated envelope surrounding said first and second electrodes;
d. the two segmented ring-shaped contact-engaging surfaces of said first and second ring-shaped electrodes making abutting contacting engagement in the closed-circuit position of the vacuum-type circuit interrupter;
e. the arc during the opening operation of the interrupter being initially established between the separated ring-shaped segmented contact-engaging surfaces;
f. a rod-shaped contact-support stem (**12, 14**) for each segmented electrode having a termination point (**12***a*, 14*a*) disposed in a plane (Z—Z) spaced axially inwardly from the support plane (Y—Y) of the respective electrode;
g. an obliquely-extending spoke (**44**) for each contact segment (**36***a*) supporting the same rearwardly thereof in the support plane (Y—Y);



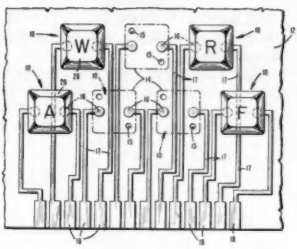
h. each spoke (**44**) supporting its respective contact segment (**36***a*) at one end thereof (**36***b*) in a generally L-shape;
i. the spacing between immediately-adjacent spokes (**44**) being relatively wide to result in an open, vented contact construction for readily venting rearwardly of ionized products of arcing for a consequent rapid build-up of dielectric strength;
j. the spokes for the first and second electrodes being mirror-images of each other to thereby cooperatively augment the arc-rotation movement of the established arc around the ring-shaped contact-engaging surfaces; and,
k. the axial distance between the supporting planes (Y—Y) of the first and second electrodes being sufficiently large to prevent substantial radial outward magnetic looping of the arc.

3,845,263
CIRCUIT BREAKER WITH SPRING CHARGED OPERATING MECHANISM
Robert C. Dickinson, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 7, 1972, Ser. No. 304,454
Int. Cl. H01h *3/30, 3/28*
U.S. Cl. 200—153 SC **15 Claims**



1. A vacuum type circuit interrupter assembly comprising, a vacuum interrupter having contacts movable between open and closed positions and a spring stored energy operating mechanism comprising: a frame; a closing spring; operating rod means connected to said vacuum interrupter; a rotatably mounted crankshaft; means for driving the crankshaft to load said closing spring; closing latch means for releasably retaining said closing spring in the loaded condition; cam means rigidly attached to said crankshaft; a contact operating lever attached to said operating rod means; a tripping latch means; a cross link means having two free ends, one end supported by said tripping latch means and having the other end supported by said cam means; a vertical link pinned at one end to said contact operating lever and pinned at its other end to said cross link means remote from said cross link means ends; said cam means being driven by said crankshaft when said closing latch means is released, to release said closing spring, and raise said cross link means and said vertical link and said contact operating lever and said operating rod; whereby said vacuum interrupter contacts are moved to their closed position.

3,845,264
SWITCH WITH LIQUID CONTAINING TUBE FOR KEYBOARD USE
Robert H. Twyford, Great Falls, Va., assignor to Mechanical Enterprises Incorporated, Alexandria, Va.
Filed Apr. 9, 1973, Ser. No. 349,455
Int. Cl. H01h *29/00*
U.S. Cl. 200—214 **15 Claims**

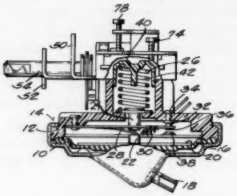


1. A switch comprising:
a housing having a deformable resilient tube with the ends thereof mounted against movement on said housing;
an electrically conductive liquid within said tube;
a pinch wire spring stationarily supported adjacent its ends by said housing to extend generally transversely of and engage said tube, said wire spring being normally tensioned to pinch said tube against a portion of said housing to part said liquid within said tube and thereby maintain an open circuit; and
switch actuator means movable toward said pinch wire spring
switch actuator means movable toward said pinch wire spring to engage and deflect said wire spring out of tube pinching engagement to thereby close a circuit through the liquid within said tube.

3,845,265
LOW PROFILE PRESSURE SWITCH WITH PLUNGER ADJUSTING MEANS
Erich Kothe, Schiller Park, Ill., assignor to Controls Company of America, Schiller Park, Ill.
Filed July 2, 1973, Ser. No. 375,780
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 S **6 Claims**

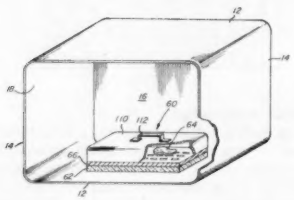
1. The combination with a pressure switch including a housing having a portion in which a plunger is reciprocally mounted and adjusts a calibrating spring, of

a mounting bracket fixed on the housing,
a shaft journaled in the bracket,
a cam fixed on the shaft and disposed laterally of said housing portion and depending below the upper position of said plunger,
lever means biased into engagement with the cam and acting on said plunger and adjusting the calibrating spring,



an arm adapted to actuate external apparatus and mounted for movement between inoperative and operative positions,
means biasing the arm to its inoperative position,
and means carried by the cam removably engaged with said arm to move the arm to its operative position when the cam is moved to a specific position.

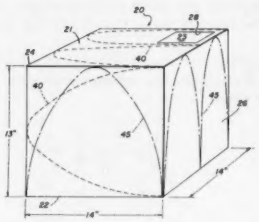
3,845,266
MICROWAVE COOKING UTENSIL
Palmer P. Derby, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed July 9, 1973, Ser. No. 377,663
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **14 Claims**



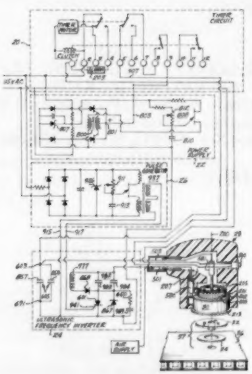
1. In combination:
an enclosure;
means for energizing said enclosure with microwave electromagnetic energy;
energy coupling means for supporting a load within said enclosure;
said load supporting means comprising a means of a nonpermeable, nondissipative material having a plurality of spaced energy transmission structures arranged to provide areas of high energy penetration with substantially no attenuation to cause elevated temperatures to heat the load material exposed to said areas.

3,845,267
MICROWAVE OVEN WITH WAVEGUIDE FEED
Louis H. Fitzmayer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jan. 4, 1974, Ser. No. 430,732
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **5 Claims**

1. Electronic heating apparatus comprising a metal enclosure in the form of an upstanding rectangular parallelepiped defining a heating cavity for receiving therein a body to be heated, said enclosure including a rectangular top wall having a rectangular opening therein adjacent to one corner thereof, source means including a ridge waveguide electrically coupled to said heating cavity through said opening in said top wall for transmitting microwave energy of a predetermined wavelength into said heating cavity, said heating cavity being dimensioned for exciting therein two predetermined complementary electromagnetic field modes having resonant frequencies relatively close to each other, at least one of said predetermined electromagnetic field modes having the fields thereof constant in a direction parallel to one of the dimensions of said heating cavity, each of said predetermined electromagnetic field modes having the fields thereof varying in the direction in which the fields of the other mode are constant, whereby there is established in said heating cavity in electromagnetic field pattern providing uniform heating of an associated body.



3,845,268
INDUCTION HEATER APPARATUS AND SYSTEM
Melvin R. Sindt, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Feb. 12, 1973, Ser. No. 331,724
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.77 **2 Claims**



1. In combination in an apparatus for producing induction heating:
an ultrasonic frequency current generator (**24**) for generating ultrasonic frequency current at a frequency above about 25 kilohertz and having first (**603**) and second (691) input terminals and first capacitance means (**605**) coupled between said terminals;
a D.C. voltage source;
first means for coupling said D.C. voltage source between said first (**603**) and second (**691**) input terminals;

a first series circuit path coupled between said first (603) and second (691) input terminals, said first series circuit path comprising a silicon controlled rectifier (601), second capacitance means (983, 984) and a primary coil (30) of an air core transformer;

said air core transformer having a disk like secondary (32);

a pulse generator coupled to the gate electrode (94) of said silicon controlled rectifier (601);

a second series circuit path coupled across said second capacitance means, said second series circuit path comprising a first diode (868) and a first inductor (777);

a third series circuit path coupled across said silicon controlled rectifier (601), said third series path comprising a first resistance means (650) and third capacitance means (989); and

a second diode (867) connected across said silicon controlled rectifier.

3,845,269

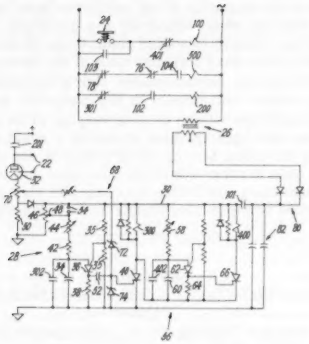
ADJUSTABLE TIMING DEVICE

Robert W. Bradley, Marblehead, Mass., assignor to USM Corporation, Boston, Mass.

Filed May 24, 1973, Ser. No. 363,364

Int. Cl. H05b *5/04*

U.S. Cl. 219—10.77 **2 Claims**



1. In a system for applying a high frequency electric field in an integrated cavity machine, for heating dielectric materials in which the intensity of the electric field is responsive to the size of the workpiece, a timing circuit comprising;

A. a high frequency electrical power source;

B. switching means connected to the power source to de-energize said source after a predetermined time;

C. capacitor timing means connected to the switching means to activate said switching means after said capacitor is charged to a predetermined voltage;

D. at least one variable resistor connected to the capacitor timing means for adjusting the charging current thereof to provide a predetermined charging period; and

E. Means connected to the variable resistor for adjusting the current flowing therein in response to the intensity of the electric field.

3,845,270

MICROWAVE HEATING AND VAPOR CONDENSING APPARATUS

William Widugris, Jr., Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 20, 1973, Ser. No. 390,155

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **2 Claims**

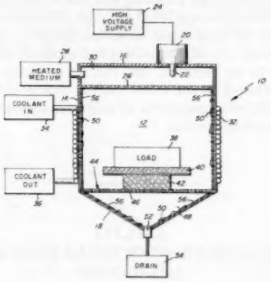
1. Microwave heating apparatus comprising:

a source of electromagnetic energy;

an enclosure defined by fluid impervious top, bottom and sidewall members;

means for coupling said energy to said enclosure;

means for disposing a load within said enclosure;



means for circulation of a heat transfer fluid medium over a substantial portion of said sidewalls to condense vapors on the interior walls of said enclosure; and

means for collecting and removing said condensation from said enclosure.

3,845,271

OSCILLATING TYPE AUTOMATIC ARC WELDING APPARATUS

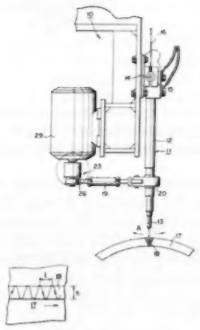
Osamu Hirano; Junichiro Kawasaki, both of Fukuyama; Tokuhiro Suzuki, Hiroshima-ken; Motoi Yamane, and Noboru Takemoto, both of Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,732

Claims priority, application Japan, Nov. 30, 1972, 47-137797

Int. Cl. B23k *9/12*

U.S. Cl. 219—124 **5 Claims**



1. An automatic arc welding apparatus comprising:

a welder body;

a nozzle for supplying a welding rod;

a supporting pivot for pivotally supporting one end of the nozzle on the welder body;

a connecting rod mechanism having one end rotatably mounted on said nozzle in the vicinity of the other end of the nozzle from which the welding rod is supplied;

an eccentric spline mechanism including a main shaft rotatably connected to the other end of said connecting rod mechanism, a splined member eccentrically secured to one end of said main shaft, and a coupling having a

splined recess which complimentarily engages said splined member, said splined member being selectively movable with respect to said splined recess; and

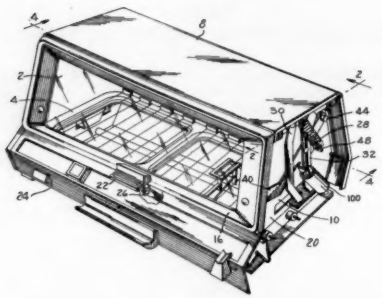
rotation drive means for rotating said coupling, said rotation drive means including a drive shaft which is coaxially connected to said coupling and has its central axis eccentric to that of said splined member, whereby the eccentric rotation of said main shaft produces a reciprocating movement of said connecting rod mechanism, causing the nozzle to be vibrated, and the eccentricity of said main shaft relative to the drive shaft is changeable by varying the angle of engagement of said splined member relative to the splined recess.

3,845,272

ELECTRIC OVEN TOASTER BREAD RACK AND DOOR MECHANISM

Willard F. Schultz, Bethlehem, and James A. Ottinger, Allentown, both of Pa., assignors to General Electric Company, Bridgeport, Conn.

Filed Sept. 21, 1973, Ser. No. 399,755
Int. Cl. F27d *11/02*
U.S. Cl. 219—386 **5 Claims**



1. An electric oven toaster having an electric heating element, and a cooking chamber including a bottom wall, two generally vertical side walls, a top wall and a front opening comprising:

a. a generally horizontal food supporting rack positioned in said chamber for movement through said front opening, said rack including a generally horizontal portion extending outwardly at one of the sides thereof;

b. means for moving the generally horizontal food supporting rack through said front opening;

c. a pair of pivots mounted at the upper portion of said oven toaster;

d. a pair of generally vertical links pivotally mounted at their upper ends on said pair of pivots, each of said links extending downwardly and including an integrally formed generally horizontal tab at its lower end portion;

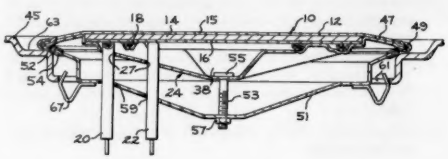
e. a pair of apertures formed in the outwardly extending generally horizontal portion of said bread rack, the lower end portions of each of said links extending through said apertures and the lower surfaces of the outwardly extending horizontal portion of the bread rack being positioned on the upper surfaces of said tabs whereby the bread rack may be readily connected to said links and supported thereon by passing the tabs through the apertures and swinging the links upward into engagement with their upper pivots.

3,845,273

COMPOSITE METAL PLATE SURFACE HEATING UNIT

Bohdan Hurko, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 28, 1973, Ser. No. 419,592
Int. Cl. H05b *3/68*
U.S. Cl. 219—462 **4 Claims**



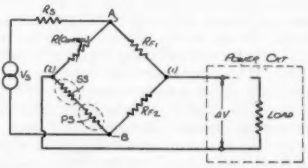
1. A low thermal mass, solid plate surface heating unit comprising a lightweight plate of composite metal with a center core selected from the group of high thermal conductivity metals or alloys such as copper, silver and aluminum, and an outer skin selected from the group of strong and oxidation and corrosion resisting metals or alloys such as stainless steel, nickel and chromium, a metal sheathed electrical resistance heating element of coiled configuration covering a large expanse of the underside of the composite plate, and an embossed back-up plate underlying the composite plate and attached at a plurality of spaced points to the underside of the composite plate along a major extent of the heating element while allowing for limited relative sliding movement of the heating element with respect to the composite plate under heating conditions without causing warpage of the composite plate, the said back-up plate including a spiral recess for receiving the coiled heating element therein, the area of the back-up plate at either side of the outermost turn of the heating element being attached to the composite plate at a plurality of spaced points that are remote from the heating element.

3,845,274

TEMPERATURE CONTROLLER FOR HYBRID PROCESS TANKS

Gerald Krenke, Fairfield, Conn., and Howard M. Layton, Pound Ridge, N.Y., assignors to Interlab Inc., Danbury, Conn.

Filed Sept. 26, 1973, Ser. No. 400,792
Int. Cl. H05b *1/02*
U.S. Cl. 219—499 **7 Claims**



1. An electronic controller for regulating the temperature of a solution contained in a plastic tank heated by electrical heaters mounted on plates secured to the wall of the tank, said controller comprising:

A. a plate sensor in thermal contact with and responsive to the temperature of one of the plates and constituted by a resistor whose resistance increases with temperature;

B. a solution sensor immersed in and responsive to the temperature of the solution and constituted by a resistor whose resistance increases with temperature;

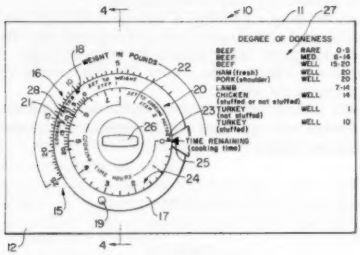
C. a bridge circuit having an input voltage applied thereto and including said sensors and arranged to yield a null output when the sensors have a predetermined resistance ratio and to yield an offset voltage output when the sensors depart from said ratio; and

D. means responsive to said offset voltage to apply electrical energy derived from a source thereof to said heaters as a function of the varying value of said offset voltage whereby when the solution is relatively cold, the resistance of the plate sensor is high relative to said solution sensor and said heaters are energized intermittently to prevent overheating of the plate.

3,845,275
COMPUTER COOKING MEANS

Charles D. Branson, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 22, 1972, Ser. No. 236,840
Int. Cl. G01g *1/00*
U.S. Cl. 235—61 A **5 Claims**

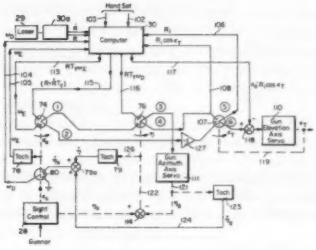


1. A cooking computer for determining the cooking operation of a cooking apparatus, said computer having a manually settable weight input means for indicating a single selected indicated weight applicable to all meat items and corresponding to the weight of a particular meat item to be cooked, said weight input means including a movable and settable part thereof, said computer having a manually settable second input means indicating a selected variable other than the weight of the meat operatively associated with said weight input means, said second input means including a movable and settable part thereof, and said computer having a time period output means operatively associated with said input means to provide as an output a cooking time period for said particular meat item computed as a function from both of said input means, the movable and settable part of one of said input means being movable and settable only after the movable and settable part of the other input means has been set so as to be set in relation to the set position of the movable and settable part of the other input means whereby the movable and settable part of said other input means must first be set in the desired position thereof before the movable and settable part of said one input means can be set in its desired position relative to the set position of the movable and settable part of said other input means, said one input means including a stationary scale and said movable and settable part thereof including a reference indicator thereon that is to be positioned adjacent the desired setting on said stationary scale to provide for the selection of said one input means, said movable and settable part of said one input means including another scale thereon whereby said other scale is positioned relative to said computer when said movable and settable part of said one input means is being set in its desired position relative to its stationary scale, said movable and settable part of said other input means including a reference indicator thereon that is to be positioned adjacent the desired setting on said other scale to provide for the selection of said other input means once the selection of said one input means has taken place.

3,845,276
LASER-SIGHT AND COMPUTER FOR ANTI-AIRCRAFT GUN FIRE CONTROL SYSTEM

Leonard Kendy, Palos Verdes Peninsula, and Richard L. Frey, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 17, 1971, Ser. No. 209,268
Int. Cl. G06g *7/78;* **F41g** *3/06*
U.S. Cl. 235—61.5 S **11 Claims**



1. In an anti-aircraft gun control system for a gun:

a. means to measure the vector velocity of a target in a first mutually orthogonal coordinate system which moves so as to always have one of its axes lying along the line of sight from a fixed origin point to a target;

b. means to generate a first set of signals representative of three measured components of said vector velocity in said first coordinate system and means to transform said first set of signals to a second set of signals expressing said vector velocity in a second inertial coordinate system which remains fixed in position and has one of its three mutually orthogonal axes lying along the gravitational vector at said fixed origin point;

c. computer means operative to derive from said first and second sets of signals continuously updated solutions of three simultaneous equations in real time to provide a third set of signals defining in said second coordinate system the azimuth and elevation angle at which said gun must be pointed in order that a preselected shell fired from said gun will strike said target if said target continues to move with a constant velocity vector equal to said measured velocity; and

d. means responsive to said third set of signals to automatically position said gun at the angle indicated thereby.

3,845,277
OFF-LINE CASH DISPENSER AND BANKING SYSTEM

Robert H. Voss, Goshen; Earl M. Ward, Hamilton, and William L. Spetz, Cincinnati, all of Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Sept. 1, 1972, Ser. No. 285,812
Int. Cl. G06k *5/00*
U.S. Cl. 235—61.7 B **40 Claims**

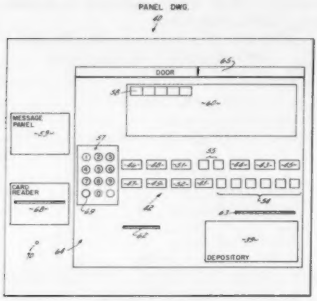
1. An automatic banking system for serving a plurality of users and comprising:

a device capable of accounting for different transactions involving a plurality of different accounts of a given one of said users, said transactions including debiting an account, crediting an account, and/or transferring funds between different accounts of said one user;

means for selecting different transactions involving different ones of said accounts of a given one of said users;

means for accepting from said one of said users information associated with said one user correlated to one or more of said transactions involving different accounts to which

said one user is entitled, said information accepting means including a card reader for reading said information from a coded card; and



means for enabling said selecting means to effect transactions involving different accounts selected by said user in accordance with said user associated information.

3,845,278

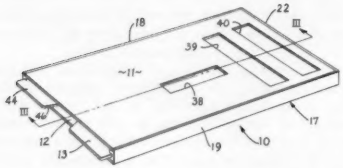
DATA RECORDER

Maurice W. Rex, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 9, 1973, Ser. No. 339,853

Int. Cl. G09b *19/18*; **G06k** *19/04*, *21/04*; **G09c** *1/02*

U.S. Cl. 235—61.6 E **2 Claims**



1. A device for recording data on substantially flat rectangular sheet members, said device comprising:

elongated rectangular and substantially flat container means defining therein a flat compartment adapted to accommodate therein at least two of said sheet members, said container means being open at only one end thereof for permitting said sheet members to be inserted into or removed from said compartment;

said container means including a pair of substantially flat parallel rectangular sidewalls disposed slightly spaced apart from one another and defining said compartment therebetween, said container means also including a substantially U-shaped edge means fixedly connected to and extending between adjacent edges of said sidewalls, said edge means being fixedly connected to three of the edges of each sidewall;

said one end of said container means having an elongated slotlike opening formed therein for communication with said compartment, said slotlike opening being defined between a pair of adjacent edges on said sidewalls;

partition means fixed to said container means for dividing said compartment into a pair of substantially flat and parallel subcompartments, said partition means including a substantially flat and rectangular partition wall positioned within said compartment between said pair of sidewalls, said partition wall being spaced from and substantially parallel with said sidewalls and having edges thereof fixedly connected to said edge means;

said partition wall extending outwardly through said elongated slotlike opening and having an exposed end portion extending outwardly beyond the open end of said container means as defined by the adjacent edges of said sidewalls, the extending end portion of said partition wall having a central notchlike recess formed therein which extends inwardly of said partition wall toward the adjacent edges of said sidewalls;

said rectangular sheet members being slightly longer than said sidewalls and slightly shorter than said partition wall whereby each sheet member, when inserted into one of said subcompartments, will have one end thereof projecting outwardly through said opening beyond the adjacent edges of said sidewalls but terminating short of the free edge of said partition wall, said one end of said sheet member overlapping said recess, the other end of said sheet member being disposed in abutting engagement with said edge means which functions as a stop for closing the other end of said compartment;

means defining a plurality of apertures through said sidewalls adapted to expose said partition wall therethrough, said apertures being located to align with first indicia upon said sheet members when they are inserted into said compartment; and

second indicia on the external surfaces of said sidewalls adjacent said apertures and adapted to correspond with said first indicia.

3,845,279

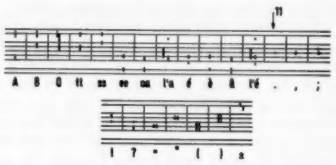
NOTATION SYSTEM

Leopold Willem Rosdorff, Androsdreef 84, Utrecht, Netherlands

Filed Feb. 28, 1973, Ser. No. 336,801

Claims priority, application Netherlands, Mar. 1, 1972, 7202713

Int. Cl. G06k *19/06*

U.S. Cl. 235—61.12 N **1 Claim**

1. A method of recording data using an information carrier having at least one system of lines arranged in parallel relationship thereon, said at least one system of lines being formed by three associated groups of lines, the perpendicular distance between adjacent ones of said three groups of lines being different from the perpendicular distance between adjacent ones of the lines within each said group, comprising the step of manually recording symbols progressively longitudinally of said lines, each symbol being made up of at least one notation mark selected from the group consisting of a set comprising combinations of dots and dashes, and a set comprising dashes, at least some of which intersect at least two of said lines, and being applied within the confines of the system of lines to extend in a direction making a substantially constant angle with said lines.

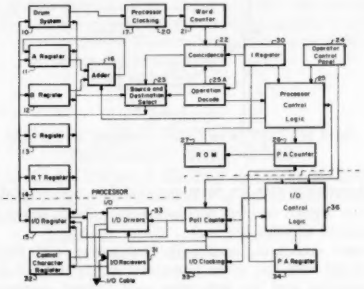
3,845,280
DIGITAL COMPUTER AND FORM READER FOR INVENTORY CONTROL AND RECORDING CASH TRANSACTIONS

Neil J. Dillon, and Boris R. Sincich, both of Los Angeles, Calif., assignors to TRW Data Systems, Inc., Torrance, Calif.

Continuation of Ser. No. 105,497, Jan. 11, 1971,. This application Feb. 16, 1973, Ser. No. 332,887

Int. Cl. G01n *21/30*; **G06k** *7/00, 7/14*

U.S. Cl. 235—61.11 R **6 Claims**



1. A method for sensing transaction data and recording the data on an input-output form bearing a plurality of clock lines adjacent a row of data blocks and in the memory of a digital computer comprising the steps of:

feeding the form containing the data into a form reader;

scanning a row of blocks adjacent the clock line for quantity of an item or price data until a data mark corresponding to a clock line is sensed;

stopping the form for a time interval;

storing sensed data in the memory;

continuing the form feeding until succeeding clock lines and data marks have been sensed;

repeating the scan, stop and data storage for each succeeding row of blocks corresponding to a clock line until all the data have been sensed;

calculating quantity x price and storing the results of the transaction in the memory; and

recording the data on the form.

3,845,281
SYSTEM FOR CORRECTING ERRORS IN PULSE DATA

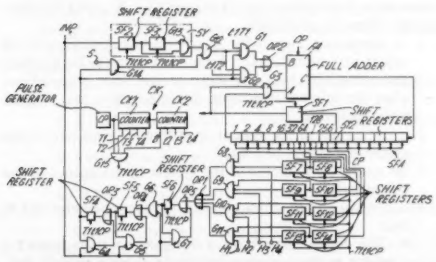
Kenzi Konisi, Osaka; Katumi Iwatani, and Tosio Simizu, both of Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 26, 1973, Ser. No. 335,817

Claims priority, application Japan, Mar. 1, 1972, 47-21213

Int. Cl. H03k *21/34*

U.S. Cl. 235—92 PL **11 Claims**



1. A system for correcting errors in the detection of distance travelled by a taxi, the errors being caused by deviation of the diameter of the wheels of the taxi from a standard diameter, comprising:

timing signal producing means for producing first, second and third control signals, a predetermined number of second control signals occurring between successive third control signals, said first control signal being initiated in time coincident with each third control signal, and lasting until the next occurrence of said second control signal;

pulse data input means for producing distance pulses upon rotation of the wheels of the taxi;

first gating means operative in response to said first control signal for converting said distance pulses into timing pulses;

a circulating shift register having an input and an output and comprising a plurality of series-connected bistable elements, wherein said circulating shift register is responsive to said second control signal for storing an accumulated count of said timing pulses, and circulating said accumulated count;

adder means for adding a timing pulse from said first gating means to said accumulated count of timing pulses as said accumulated count is circulated from the output of said circulating shift register, said adder means thereby providing a new accumulated count;

means applying said new accumulated count to the input of said circulating shift register;

pulse producing means responsive to said third control signals for producing correction pulses when predetermined counts have been reached in said circulating shift register;

means for selecting at least one of said correction pulses;

means for generating an addition command and a subtraction command; and

correction circuit means responsive to said selected correction pulses and to one of said addition and subtraction commands to alter the application of timing pulses to said adder means, wherein said accumulated count is increased when said addition command is generated, and wherein at least one of said timing pulses is eliminated when said subtraction command is generated.

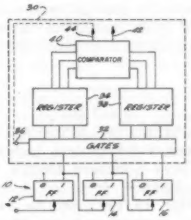
3,845,282
APPARATUS AND METHOD FOR UNAMBIGUOUS COUNTER READING

Clyde E. Mattson, Waukesha, Wis., assignor to Kearny & Trecker Corporation, Milwaukee, Wis.

Continuation of Ser. No. 285,814, Sept. 1, 1972, abandoned. This application Feb. 8, 1974, Ser. No. 440,805

Int. Cl. H03k *21/18*

U.S. Cl. 235—92 EA **5 Claims**



1. For use in effecting an unambiguous reading of the number stored in a binary counter to avoid errors caused by the counter changing its state during the reading, the combination comprising; transfer means interconnected between individual orders of said binary counter and a first register, means for selectively activating said transfer means to transfer a representation of the instantaneous condition of said binary counter into said first register for registering a first reading, means for

selectively interconnecting said transfer means between said orders of said counter and a second register, means for selectively activating said transfer means to transfer a representation of the instantaneous condition of said counter into said second register for registering a second reading immediately after registration of said first reading, comparator means operative subsequently to the reading of said counter into said second register for comparing the content of said first and second registers, means connected to said comparator means and selectively operative in response thereto to activate said transfer means immediately after the registration of said second reading to make a third transfer of the condition of said counter to one of said registers only if the condition of said counter during said first transfer is not equal to the condition of said counter during said second transfer, and means connected to transmit one of two consecutive identical readings of said counter for use as the desired unambiguous reading of the counter.

3,845,283

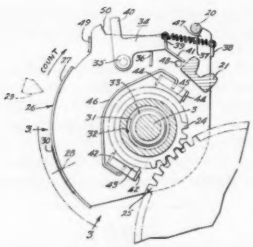
FOURTH WHEEL FOR THREE-WHEEL COUNTERS

Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Feb. 14, 1974, Ser. No. 442,535

Int. Cl. G06c *15/26, 15/42*

U.S. Cl. 235—133 R **10 Claims**



1. For a counter with an array of identical ordered number wheels each having a driving gear segment adapted to be used in transferring a count from a number wheel of lower order to the number wheel of next higher order: an arrangement for increasing the maximum count-indicating capability of said counter beyond that provided by said array, comprising a plate mounted for rotation adjacent the number wheel of highest order in said array, said plate bearing numerical indicia; and a pawl pivotally attached to said plate and having a portion engageable by the driving gear segment on said highest order wheel to cause rotation of said plate through a predetermined angle.

3,845,284

POSITIONING APPARATUS

Nobuo Taguchi, and Takehiko Ono, both of Tokyo, Japan, assignors to Tokyo Schibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Mar. 15, 1973, Ser. No. 341,794

Claims priority, application Japan, Mar. 16, 1972, 47-26111

Int. Cl. B25j *1/02*

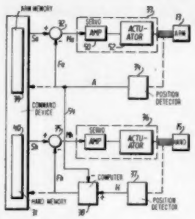
U.S. Cl. 235—150.1 **6 Claims**

1. A positioning apparatus for positioning at least first and second members in response to given command signals therefor, which comprises:

first and second actuating means for positioning said two members in response to first and second manipulation signals, respectively;

first and second detecting means for generating first and second position signals proportional to the movement of said first and second members, respectively;

first comparing means for comparing said first position signal with said given command signal for said first member and for generating said first manipulation signal in response thereto;



computing means for receiving said first and second position signals and for generating a feedback signal in response thereto; and

second comparing means for comparing said feedback signal with said given command signal for said second member and for generating said second manipulation signal in response thereto.

3,845,285

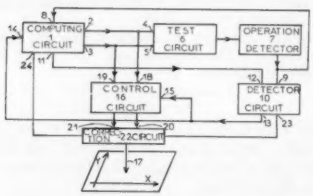
AUTOMATIC FUNCTIONAL MARGIN PLOTTER

Jean-Pierre Henri Michel Leroy, Courbevoie, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed Feb. 28, 1973, Ser. No. 336,646

Int. Cl. G06f *15/20*

U.S. Cl. 235—151 **11 Claims**



1. An automatic plotter of the functional margin of a system dependent on two parameters, involving the point-by-point scanning of straight lines evenly distributed within an area representing step-by-step variations of the parameters between their limit values (Xm, Ym) and (X_M, Y_M) and comprising the following elements:

1. a computing circuit for step-by-step calculation of all values of X and Y, taken from inbetween the limit values and computed along said these straight lines, scanned one after the other in the same direction, their two outputs being linked to
2. a test circuit of the system operating for each pair of the calculated values (X, Y),
3. an operation detector of the system in the output of the test circuit,
4. a control circuit of an element plotter, characterized in that:

A. The computing circuit is designed so as to restrict a vector to the scanning amplitude along a straight line, the latter overstepping the presumed margin only once in the opposite direction of the previously scanned margin,

B. an additional detector circuit signals the overstepping of the margin during the scanning,

C. all elements are connected in the following fashion:

a. the output of the detector (7) is linked, with an input of the computing circuit (1) and with an input of the detector (10),

b. an output of the circuit (1) is tied to an input of the detector (10),

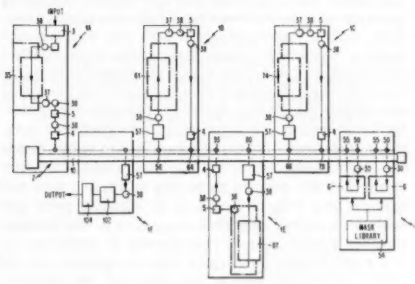
c. the detector (10) is linked to the control circuit (16) of the element plotter (17) and to the computing circuit (1),

d. two outputs of the control circuit (16) are linked with the element plotter (17) by means of a correction circuit (22) controlled by the detector (10) and the computing circuit (1).

3,845,286
MANUFACTURING CONTROL SYSTEM FOR PROCESSING WORKPIECES

Jesse Aronstein; William E. Harding, and Philip M. Zeiss, all of Poughkeepsie, N.Y., assignors to International Business Machines Incorporated, Armonk, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,494
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.1 **19 Claims**



1. A manufacturing system for processing work-pieces comprising:

A. a plurality of processing work stations, having loading and unloading positions, each of said stations performing different processing operations on said work-pieces;

B. a conveyor means for transporting individual ones of said work-pieces between and at any selected ones of said stations;

C. means for transferring said individual ones of said work-pieces between said conveyor means and said stations at their said loading and unloading positions; and

D. control means for said conveyor means and transfer means for routing said work-pieces individually between and at selected ones of prescribed sequence of processing operations, with said control means comprising

E. first means for

a. determining at successive ones of each of a prescribed sequence of said stations

i. if the conveyor means is transporting a said work-piece

ii. if the unloading position is occupied by a said work-piece

iii. if the next succeeding station is operative and

iv. if the loading position of the said next station is not occupied by a said work-piece, and

b. generating a control signal representing

i. the first positive said determination of all said conditions at one of said sequence of stations and

ii. a negative determination of at least one of said conditions at all of said stations in said sequence thereof,

F. second means responsive to said control signal for

a. maintaining iterative determination by said first means on a negative determination

b. transferring a work-piece to said conveyor means from the station at which a first positive determination was made,

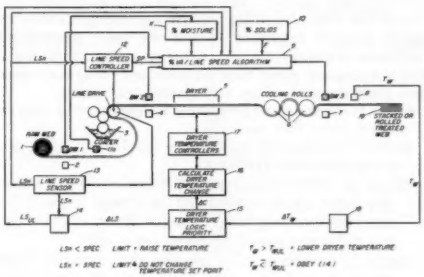
c. dispatching said work-piece on said conveyor means to the loading position of the next station in said prescribed sequence thereof for transfer of the workpiece thereto, and

d. return operation of said system to said first means for repeating its said determination thereat.

3,845,287
METHOD AND APPARATUS FOR CONTROLLING A MATERIAL TREATER

Robert Emil Fremont; Alfred Thomas Guertin; Charles Robert Fay, and John William Stinson, all of Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 357,134, May 4, 1973,. This application Feb. 26, 1974, Ser. No. 446,076
Int. Cl. G06g *7/58*
U.S. Cl. 235—151.1 **10 Claims**



1. A method of controlling a fibrous material treating process including a coater for impregnating a host material with a resin-bearing volatile solution and a dryer for drying said material comprising

1. measuring the weight of the host material before impregnation,

2. measuring the weight of the impregnated material before drying,

3. measuring the weight of the dried, impregnated material,

4. providing the percent resin solids concentration of said solution, the moisture content of said host material before impregnation and a desired percent volatiles concentration of the dried impregnated sheet,

5. computing the amount of volatiles present in said dried material, and

6. controlling the line drive of the coater in accordance with the resultant computed volatile percentage to produce said desired percent volatiles concentration,

7. measuring the temperature of the dried, impregnated material,

8. measuring the line speed of the host material through the coater,

9. determining the variance from or the compliance of said line speed and said temperature of the dried, impregnated material with predetermined specified limits of line speed and temperature, respectively,

10. determining a need for a temperature change in said dryer from said variance or compliance determinations,

11. computing the required temperature change in accordance with a predetermined function and

12. controlling the temperature of said dryer in accordance with the computed change required.

3,845,288

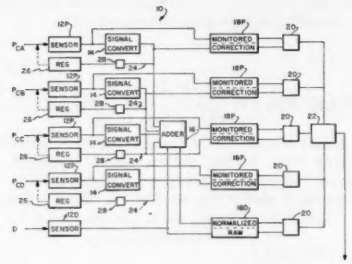
DATA NORMALIZING METHOD AND SYSTEM

William S. Cornyn, Jr., Palos Verdes, Calif.; Stephen A. Dier, Fraser, and Robert M. Lynas, Birmingham, both of Mich., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 157,095, June 28, 1971, Pat. No. 3,774,457. This application Sept. 24, 1973, Ser. No. 400,273

Int. Cl. G06g *7/12*

U.S. Cl. 235—151.34 **5 Claims**



1. A test data normalizing system for testing a rotary hydraulic pump to determine its flow rate under standard test conditions at which the pump operating parameters hydraulic fluid temperature, pump back pressure, and pump rotor speed have given nominal values, said system, comprising:

means for sensing and producing a signal representing the actual pump flow rate;

means for sensing and producing a signal representing each pump operating parameter;

means for transforming each parameter signal to a correction factor signal representing the change in pump flow rate corresponding to the deviation, if any, of the respective parameter from its nominal value; and

means for combining said flow rate and correction factor signals to produce a normalized flow rate signal representing the normalized pump flow rate under said standard test condition.

3,845,289

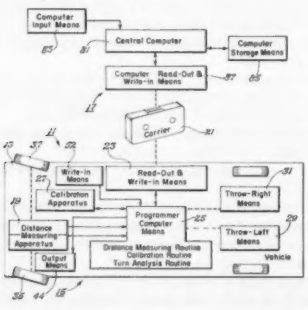
METHOD AND APPARATUS EMPLOYING AUTOMATIC ROUTE CONTROL SYSTEM

Robert L. French, Fort Worth, Tex., assignor to Avon, Inc., Fort Worth, Tex.

Filed July 18, 1972, Ser. No. 272,734

Int. Cl. G06f *15/50*

U.S. Cl. 235—151.2 **45 Claims**



1. Apparatus for facilitating effecting actions by at least one carried operator at closely spaced predesignated action points along a predetermined route segment, as in commercial and residential neighborhoods, comprising:

a. a vehicle;

b. a distance measuring apparatus connected with said vehicle and capable of generating a plurality of discrete signals, one for each increment of distance travelled by at least one predetermined wheel of said vehicle; said signals being adapted for summation into at least one distance travelled signal that is a function of the cumulative distance travelled by said vehicle at least from a predetermined initiation point;

c. a carrier having thereon a route segment action signature containing accurate information as to said predesignated actions to be effected, said information comprising a plurality of respective action points correlated with respective distances along said predetermined route segment, and whether each said action is to be performed to the left or to the right with respect to the direction of travel of said vehicle proceeding along said predetermined route segment; said information being in read-out format that is compatible with an automatic programmer-computer means;

d. read-out and write-in means drivingly connected with said carrier for reading its route segment action signature into an automatic programmer-computer means responsive to automatic orders from said automatic programmer-computer means;

e. an automatic programmer-computer means disposed in said vehicle and connected with said distance measuring apparatus so as to be driven by said discrete signals therefrom, and drivingly connected with said read-out and write-in means and, hence, said carrier so as to effect advancement of said carrier; said programmer-computer means having a distance measuring routine for summing said discrete signals from said distance measuring apparatus for at least one distance travelled signal; said automatic programmer-computer means having switch means for responsively connecting the programmer-computer means with the distance measuring means and with said read-out and write-in means at an initiation point and being programmed such that, responsive to said distance travelled signals and to a coded action at respective action points in said route segment action signature on said carrier when said vehicle has traversed the indicated linear distance along said predetermined route segment to the respective said action point, said programmer-computer means generates respective first and second signals designating respective action locations at which an action is to be performed and whether said action is to be to the left or to the right;

said automatic programmer-computer means also having calibration routine for maintaining below a predetermined maximum permissible error threshold cumulative variation between respective said distance travelled signals employed to effect respective said first and second signals at respective action points and the accurate distances thereto.

3,845,290

DECIMAL-TO-BINARY CONVERTER

Jogchum Reitsma, Beekbergen, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1973, Ser. No. 352,874

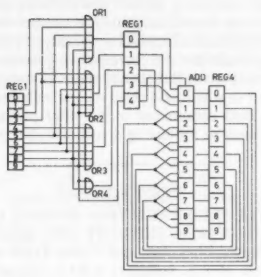
Claims priority, application Netherlands, May 4, 1972, 7206062

Int. Cl. H03k *13/24*

U.S. Cl. 235—155 **2 Claims**

1. A device for recoding a number consisting of successive digits from a higher radix to a lower radix, comprising an output register in which, after the recoding of a series of high order digits of the number, the part of the number which is recoded according to the lower radix is stored, an adder in which at least an *m*-multiple and an *n*-multiple of the recoded

part of the number are added, the sum of m and n being equal to the higher radix, m and n themselves being integer powers of the lower radix, and also comprising an add input on which a digit of next lower significance of the number to be recoded is received, an auxiliary coding unit being provided in which



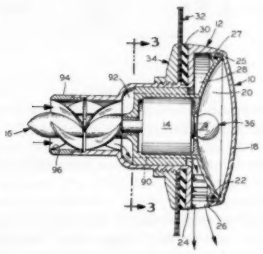
the digit of next lower significance is recoded into at least two parts which are coded according to the lower radix and which have maximum values of $m-1$ and $n-1$, respectively, said parts being applied, together with the said m-multiple and n-multiple, respectively, to the adder.

3,845,291

WATER POWERED SWIMMING POOL LIGHT

Raymond E. Portyrata, North Haven, Conn., assignor to Titan Tool and Die Company, Inc., Wallingford, Conn.

Filed Feb. 8, 1974, Ser. No. 440,832
Int. Cl. F21v *31/00*
U.S. Cl. 240—26 **10 Claims**



1. A self-powered light particularly adapted for use in a swimming pool to provide illumination thereof comprising:

a. a housing having intake means formed therein at one end thereof operable to permit fluid to flow into the light, passage means provided in the interior of said housing connected at one end in fluid flow relationship with said intake means, and outlet means formed in said housing at the other end thereof connected in fluid flow relationship with the other end of said passage means operable to permit fluid to exit from the light;

b. a lamp assembly mounted in said housing at said other end thereof including reflector means, a light bulb supported in said reflector means, and a lens operatively connected to said reflector means operable as a cover therefor;

c. generator means supported in said housing in proximity to said lamp assembly including magnetic means and coil means supported for rotation relative to each other, and electrical circuit means connecting said coil means and said light bulb in electrical circuit relationship, said magnetic means being operable to produce a magnetic field, said coil means being positioned in said magnetic field wherein when relative rotation of said magnetic means and said coil means occurs an electrical current is produced in said coil means and is provided through said electrical circuit means to said light bulb to turn said light bulb ON;

d. shaft means supported in said housing for rotation relative thereto having one of said magnetic means and said coil means mounted thereon at one end thereof for rotation therewith; and

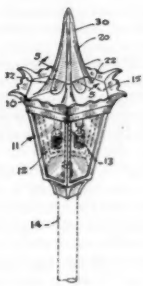
e. a turbine wheel assembly supported within said housing at said one end thereof including propellor means mounted on said shaft means at the other end thereof for rotation therewith, said propellor means including blade means provided on the periphery thereof so as to be in the path of flow of fluid through said housing wherein the force of fluid striking said blade means is operable to cause said propellor means and thereby said shaft means to rotate within said housing.

3,845,292

LAMP VENT STRUCTURE

Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Continuation of Ser. No. 42,959, June 3, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,223
Int. Cl. F21v *17/00*
U.S. Cl. 240—51 **7 Claims**



1. A lamp housing having an upper portion defining a vent for ventilating the interior of the housing, said upper portion comprising a hollow cover member having an upper surface, a hollow dome member having a lower surface joined to the upper surface of said cover member, each of said members having a plurality of walls with spaced first portions and second portions, said second portions extending between said first portions, said first portions of said dome and cover members forming a continuous surface, said second portion of said cover member being indented inwardly with respect to the second portion of said dome member to define a vent opening in communication with the interior of the housing.

3,845,293

ELECTRO-OPTICAL TRANSMISSION SYSTEM UTILIZING LASERS

Manfred Borner, Ulm/Donau, Germany, assignor to Telefunken, Tepa, Patentverwertungsgesellschaft mbH, Ulm-/Donau, Germany

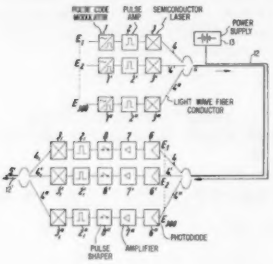
Continuation-in-part of Ser. No. 689,850, Dec. 12, 1967, abandoned. This application Sept. 28, 1972, Ser. No. 293,035
Claims priority, application Great Britain, Dec. 13, 1967, 56549/67; France, Dec. 20, 1967, 67.133137
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **11 Claims**

1. A laser beam transmission system for information represented in pulse code modulation comprising in combination:

a laser transmitter stage means for producing a light beam which is pulse code modulated with the information to be transmitted;

a light responsive receiver stage means for receiving the pulse code modulated light beam; and

a signal transmission channel connecting said transmitter stage means with said receiver stage means, said transmission channel including a plurality of series connected repeater stages and a plurality of closed light signal transmission sections consisting of light-wave fiber conductors, each of said sections connecting the output of one stage with the input of the succeeding adjacent stages of said system, each of said repeater stages including a photosensitive receiver for the information bearing light



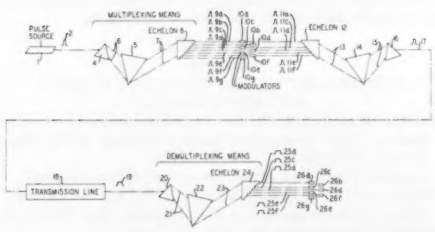
emitted by the preceeding stage, said photosensitive receiver including a semiconductor avalanche photodiode connected to provide for the direct detection of the received light, a semiconductor amplifier for amplifying the electrical signals from said photodiode, a semiconductor pulse-processing circuit means for reshaping the amplified electrical signals, and a non-externally cooled semiconductor laser means, which is responsive to the reshaped electrical signals from said pulse-processing circuit means, for producing a light beam modulated according to said reshaped electrical signals and transmitting the information to the succeeding stage of said system via one of said closed transmission sections.

3,845,294

MULTIPLEXED COMMUNICATIONS SYSTEM

George Sanford Indig, Bernards Township, Somerset County, and Peter Michael Rentzepis, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1973, Ser. No. 358,732
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **13 Claims**



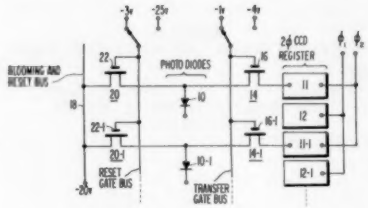
1. Optical communications system including first means for generating pulsed electromagnetic radiation having a substantial portion of its energy in the wavelength range of 500μm to 100 Angstrom units, second means for modulating such pulsed radiation, and third means for further processing such modulated information, characterized in that separation means is interposed between said first and said second means for separating pulses emanating from said first means into radiation units containing distinct and differing spectral portions, said portions herein designated as component pulses, in which said second means includes a plurality of elements each so arranged as to admit but a corresponding component pulse so that such component pulses may serve as communications subcarriers and in which said third means includes means for reconstituting said component pulses after passage through said second means so producing a reconstituted pulse.

3,845,295

CHARGE-COUPLED RADIATION SENSING CIRCUIT WITH CHARGE SKIM-OFF AND RESET

Brown F. Williams, Princeton, and Walter Frank Kosonocky, Skillman, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 2, 1973, Ser. No. 356,367
Int. Cl. H01j *11/00*
U.S. Cl. 250—211 J **8 Claims**



1. The combination in a radiation sensing array of:

a radiation sensor for accumulating charge signal in response to radiation received thereby;

a drain maintained at a potential suitable for receiving said charge signal;

a register stage;

means coupling said sensor to said register stage for transferring to said register stage only that portion of the charge signal accumulated by said sensor of greater than a given charge signal level; and

means coupling said sensor to said drain for forming a potential barrier between said sensor and said drain in response to one value of control signal and for forming a conduction channel between said sensor and said drain for transferring the remaining portion of the charge signal to said drain and resetting said sensor to a reference potential in the process, in response a second value of said control signal.

3,845,296

PHOTOSENSITIVE JUNCTION CONTROLLED ELECTRON EMITTER

Alvin D. Schnitzler, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 10, 1973, Ser. No. 405,229
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **13 Claims**

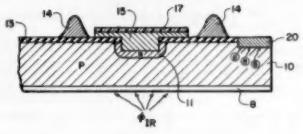
1. An electronic imaging device enclosed in a vacuum envelope comprising:

a plurality of reverse biased rectifying photosensitive junctions;

a plurality of discrete electrically isolated photoemitters serially connected with said plurality of reverse biased rectifying photosensitive junctions to form a mosaic of discrete electrically isolated photocathodes to form a composite sandwich structure;

a cathode luminescent phosphor screen;

a bias light source for uniform illumination of the front surface of said plurality of discrete electrically isolated photoemitters for producing electron current saturation therefrom;



an external grid positioned adjacent to and separated from said plurality of discrete electrically isolated photoemitters;

voltage means connected to said fine mesh grid for accelerating electrons emitted from said plurality of discrete electrically isolated photoemitters to said cathode luminescent phosphor screen; and

an electronic focusing means for proximity focusing the photocathode current in the field between said fine mesh grid and said plurality of discrete electrically isolated photoemitters.

3,845,297

LIGHT RECEIVER

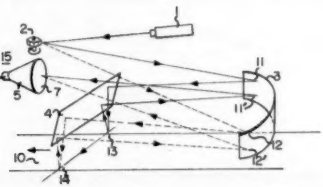
Itsuji Maeda, Akishima, and Yahiko Tamaki, Kodaira, both of Japan, assignors to Hitachi Electronics Co., Ltd. and Nisshin Steel Co., Ltd., both of Tokyo, Japan

Filed Jan. 19, 1973, Ser. No. 325,093

Claims priority, application Japan, Jan. 28, 1972, 47-9867

Int. Cl. G02b *5/14*; **H01j** *5/16, 39/12*

U.S. Cl. 250—216 **5 Claims**



1. A light receiver comprising a cone-shaped or polyhedral light collector with an inner reflection surface, a diffusion film covered on the base of said light collector, a first photoelectric element provided on the top of said light collector for receiving light from inside of said light collector, and a second photoelectric element provided at the center of said diffusion film for receiving light from outside of said light collector.

3,845,298

OPTICAL SCANNING DEVICE

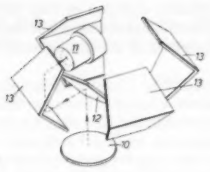
Herbert Morrison Runciman, Anniesland, Great Britain, assignor to Barr and Stroud Limited, Glasgow, Scotland

Filed Oct. 5, 1973, Ser. No. 404,125

Claims priority, application Great Britain, Oct. 25, 1972, 49119/72

Int. Cl. H01j *5/16*

U.S. Cl. 250—236 **6 Claims**



1. An optical scanning device comprising an elongate detector, optical means for receiving radiation to be scanned, said optical means being arranged to direct said radiation along a radiation path to said detector, said detector and optical means each being fixedly mounted on a support, a plurality of optical members mounted to rotate around an axis which is parallel to the axis of the detector sequentially to complete the radiation path between said optical means and said detector and adapted to scan radiation emanating from the optical means and to relay scanned radiation to the input of the detector, each said optical member comprises two planar reflecting surfaces disposed substantially at right angles to each other, the line of intersection of the planes defined by said two planar reflecting surfaces being disposed at right angles to said axis of rotation, the lines of intersection for each of the optical members being equidistant from the axis of rotation.

3,845,299

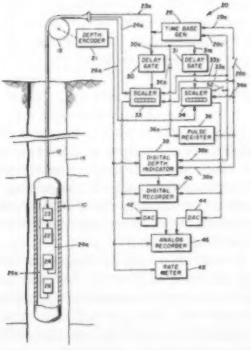
METHOD FOR URANIUM EXPLORATION EMPLOYING RADIOACTIVE RECONNAISSANCE AND ASSAY LOGGING

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 310,612, Nov. 29, 1972. This application Apr. 13, 1973, Ser. No. 350,868

Int. Cl. G01t *1/30*

U.S. Cl. 250—256 **6 Claims**



1. In a method of prospecting for uranium ore in a section of subterranean rock penetrated by a borehole, the steps comprising:

a. traversing said rock section with a logging tool located in said well and operating a neutron source therein to irradiate adjacent rock material at a plurality of locations along said borehole with repetitive bursts of fast neutrons spaced by time intervals greater than the time required for dissipation of neutrons originating in said bursts,

b. during time intervals between said bursts and after the time required for dissipation of neutrons originating in said bursts operating a detector to detect radiation attendant to delayed neutrons resulting from neutron fission of uranium,

c. recording radiation detected in step (b) in correlation with depth to obtain a reconnaissance log whereby zones of interest suspected of containing uranium ore may be identified,

d. thereafter irradiating a suspected uranium ore bearing zone with repetitive bursts of fast neutrons spaced by time intervals greater than the time required for dissipation of neutrons originating in said bursts and continuing the irradiation of said zone for a relatively long period of time in comparison to the period of irradiation of said zone in step (a),

e. during time intervals between said bursts and after the time required for dissipation of neutrons originating in said bursts operating a detector to detect radiation attendant to delayed neutrons resulting from neutron fission of uranium, and

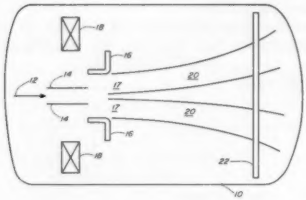
f. recording radiation detected in step (e) to obtain an assay log quantitatively representative of the uranium content of said zone.

3,845,300

APPARATUS AND METHOD FOR MAGNETOPLASMADYNAMIC ISOTOPE SEPARATION

Duane J. Roehling, and David B. Fradkin, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 18, 1973, Ser. No. 352,380
Int. Cl. B01d *59/44*
U.S. Cl. 250—282 **6 Claims**



1. An apparatus for separating at least two of the isotopes of a vaporized element comprising a predetermined distribution of said isotopes, the apparatus comprising:

an annular anode and an annular cathode having a common axis of rotation, said anode and cathode being spaced from one another along said axis;

means for producing a tubular magnetic field concentric about and enclosing said anode and said cathode;

means for introducing said vaporized isotopes substantially parallel to said axis, through said annular anode and said annular cathode, respectively, so that said particles are accelerated, entering the plasma state downstream from said anode and cathode; and

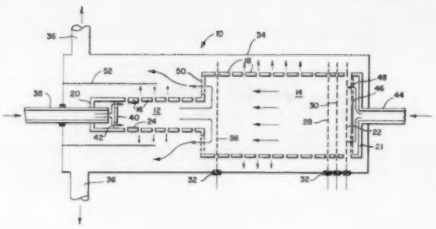
means for collecting said isotopes from the plasma state comprising an isotope distribution different from said predetermined isotope distribution.

3,845,301

APPARATUS AND METHODS EMPLOYING ION ANALYSIS APPARATUS WITH ENHANCED GAS FLOW

Roger F. Wernlund, Lake Worth; David L. Carroll, Lantana; Henry C. Gibson, and Martin J. Cohen, both of West Palm Beach, all of Fla., assignors to Franklin GNO Corporation, West Palm Beach, Fla.

Filed May 10, 1972, Ser. No. 252,086
Int. Cl. H01j *39/34*
U.S. Cl. 250—287 **42 Claims**



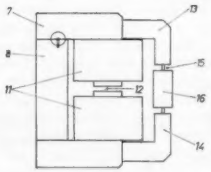
1. Ion analysis apparatus and the like comprising an ion-molecule reaction chamber followed by an ion drift chamber communicating therewith, means for establishing a drift field along said chambers, means for introducing a sample gas into said reaction chamber through an inlet and causing said sample gas to flow through said reaction chamber toward said drift chamber, means including an ionizer for forming ions in said reaction chamber by ion-molecule reactions, outlet means for said gas substantially at the junction of said chambers and closer to said drift chamber than said inlet, means for introducing a drift gas into said drift chamber in counter-flow to the flow of sample gas in said reaction chamber, and means for detecting ions after they have drifted in said drift chamber.

3,845,302

DEVICE FOR DETERMINING AND INDICATING MASS NUMBERS IN A MASS SPECTROMETER

Kjell Uno Linderoth, Spanga, Sweden, assignor to Kungl. Karalinska Mediko. Kirurgiska, Stockholm, Sweden

Filed Sept. 12, 1972, Ser. No. 288,285
Int. Cl. H01j *39/34*
U.S. Cl. 250—294 **6 Claims**

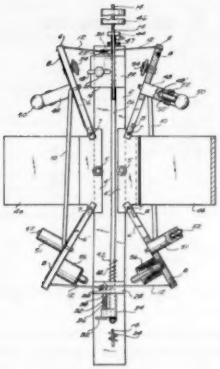


1. In mass spectrometers of the type wherein a stream of ions is deflected by electromagnetic means and the amount of said deflection may be varied by varying the strength of the magnetic field generated by said electromagnetic means, the improvement which comprises an electromagnet having two pole pieces which together define the air gap through which the deflected ions pass, means to connect said pole pieces together for relative movement in response to changes in the strength of the magnetic field generated, and mechanical force measuring means to resist said relative movement and to generate an output signal linearly proportional to the square of the strength of said magnetic field.

3,845,303
METHOD AND APPARATUS TO DETERMINE ACTIVITIES OF A NATURAL AQUATIC POPULATION OF MICROSCOPIC ORGANISMS

Russell L. Richards, 450 Portlock Rd., Honolulu, Hawaii 98625, and Kaare R. Gundersen, 3662 Woodlawn Ter., Honoluly, Hawaii 96822

Filed , Ser. No. 354,137
Int. Cl. G21h *5/02*
U.S. Cl. 250—303 **22 Claims**

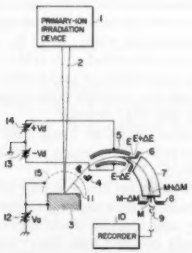


1. An apparatus of the character described, comprising, in combination, a frame; at least one container mounted on said frame and having opposite open ends and closure means at said open ends movable between an open and a closed position fluid-tightly closing said opposite ends of said container; biasing means for urging said closure means to said closed position; releasable latching means for holding said closure means against the force of said biasing means in open position; suspension means for suspending said frame and the container mounted thereon in upright position at selected depths in a body of water; and means for releasing said latching means while said frame is thus suspended at a selected depth so as to move said closure means under the influence of said biasing means to said closed position to thereby trap an amount of water in said container.

3,845,304
ION MICROANALYZER

Hifumi Tamura, Hachioji; Kazumitsu Nakamura, Katsuta, and Toshio Kondo, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1973, Ser. No. 343,019
Claims priority, application Japan, Mar. 21, 1972, 47-27386
Int. Cl. H01j *37/26*
U.S. Cl. 250—306 **15 Claims**

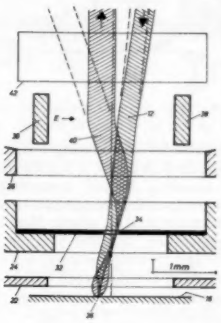


1. An ion microanalyzer comprising: means for generating an ion beam, means for directing said beam to a desired portion of a specimen, a mass spectrometer for analyzing secondary ions emitted from said specimen, a variable electric source for applying a voltage to said specimen, and a shield body which encloses said specimen and to which said voltage is applied.

3,845,305
MICROBEAM PROBE APPARATUS

Helmut Liebl, Eching, Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Gottingen, Germany

Filed May 10, 1973, Ser. No. 358,970
Claims priority, application Germany, May 12, 1972, 2223367
Int. Cl. H01j *37/26*
U.S. Cl. 250—309 **6 Claims**



1. A microbeam probe apparatus comprising an ion or an electron particle source (**10**) for producing an essentially collimated primary beam (**12**) of charged particles having a relatively high energy,

a charged particle objective system including first and second sets of electrodes (**26, 24—24, 22**) to produce first and second electrostatic lens fields of short focal lengths in first and second areas of space respectively, said fields being positioned to be transversed by the path of said primary beam **12** in the order named,

a diaphragm (**32**) having a fine aperture (**34**) positioned between said first and second areas of space,

a conductive surface (**16**) comprising a sample area to be investigated positioned in spaced relationship near said second set of electrodes on the side thereof, remote from said first set,

means for biasing said electrodes of said first and second sets, and said conductive surface to

a. produce first and second electrostatic lens fields which cooperate to focus said primary beam through said aperture (**34**) into a small spot on said sample area,

b. cause secondary charged particles, which emerge from said sample area under the action of said primary beam to accelerate towards said second set of electrodes, and be focused by said second lens field into a focus area within said aperture (**34**),

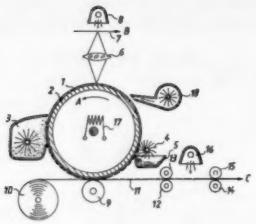
c. and collimate said secondary particles passing through said opening into a secondary beam (**40**) of relatively low energy traveling in a direction essentially opposite to that of said primary beam (**12**), and

deflecting means (**62**) acting on said primary and secondary beams to deflect said relatively low energy secondary beam (**40**) away from the path of said primary beam while leaving said relatively high energy primary beam essentially unaffected.

3,845,306
THERMOMAGNETIC IMAGING APPARATUS

Josef Kohlmannsperger, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 195,338, Nov. 3, 1971, Pat. No. 3,791,843.
This application Oct. 18, 1973, Ser. No. 407,594
Claims priority, application Germany, Nov. 4, 1970, 2054117
Int. Cl. G03g 17/00
U.S. Cl. 250—316 12 Claims

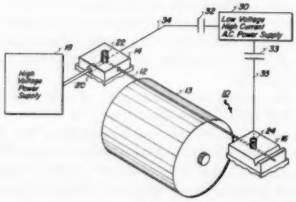


1. In an apparatus for reproducing images of originals on transfer material, such as paper, a combination comprising a mobile image receiving surface containing an ingredient which is antiferromagnetic at temperatures above and below the Neel temperature thereof, whose Neel temperature exceeds room temperature, and which exhibits a pronounced coercive force at said Neel temperature; and means for exposing thermal images of originals onto said surface, including means for changing the temperature of said surface in accordance with the image pattern of an original so that said surface exhibits first areas which are maintained at said Neel temperature and second areas which are maintained at other than said Neel temperature.

3,845,307
COMBINED CORONA AND LUMINESCENT DISCHARGE

Charles F. Gallo, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 22, 1973, Ser. No. 334,829
Int. Cl. G03g 15/00
U.S. Cl. 250—326 11 Claims



1. In electrophotographic apparatus wherein electrical corona charges are applied to a photoreceptor by corona apparatus for discharging the photoreceptor including at least one corona wire positioned adjacent the photoreceptor surface, which corona wire is provided with a high voltage for electrical air ionization by a connected high voltage supply means, the improvement comprising:

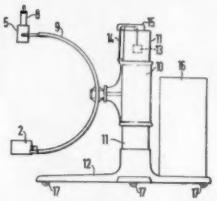
high current low voltage power supply means electrically connected through said same corona wire for heating said corona wire to self-luminous incandescence,

said self-luminous incandescence of said corona wire providing luminous exposure discharge of said photoreceptor surface in addition to said high voltage corona discharge.

3,845,308
DENSITOMETERS

Victor Gordon Cattrell, Edinburgh, Scotland, assignor to National Research Development Corporation, London, England

Filed Sept. 21, 1971, Ser. No. 182,414
Claims priority, application Great Britain, Sept. 22, 1970, 45172/70
Int. Cl. G01t 1/20
U.S. Cl. 4 Claims



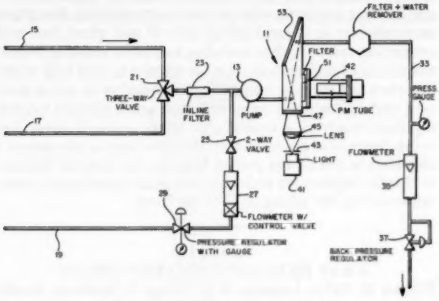
1. A densitometer for diagnostic use to indicate density variations due to respiratory and cardiac cycle movements in a human subject, comprising:

a. a trolley platform;
b. a column upstanding from said platform;
c. a support mounted on said column for axial adjustment therealong;
d. a U-shaped member having a first U-arm, a U-base, and second U-arm, disposed with its medial axis substantially horizontal, and mounted at its U-base on said support for rotation about said medial axis;
e. a screened radiation unit housing a γ-ray isotope source, which unit is mounted on the free end of said first U-arm and is formed with a collimation channel outlet directed towards the free end of said second U-arm;
f. a mechanism selectively operable between first and second conditions in which said source is respectively wholly screened in said unit from said outlet and exposed to said outlet to emit a γ-ray beam therefrom;
g. a detector unit mounted on the free end of said second U-arm, which unit includes a fluorescent scintillation detector device aligned with said collimation channel outlet for response to said beam, and a photomultiplier operably related with said detector device to generate electrical signals in response to scintillation events in said device;
h. a discriminator and pulse forming circuit connected with said photomultiplier to form electrical output pulses in response to said signals representing absorption of γ-rays of a predetermined energy level in said detector device;
i. a ratemeter connected with said circuit to form a D.C. voltage representation of said pulses;
j. a potential divider network connected with said ratemeter to balance said D.C. voltage;
k. an operational amplifier connected with said ratemeter and said network to provide a difference signal output therebetween;
l. at least two low pass filters having different, but overlapping bandwidths representing respective components of respiratory and vascular cycle movements, and switches to selectively connect said filters with said amplifier for response to said difference signal output; and
m. indicator means connected with said filters to display or record the signal components passed thereby.

3,845,309
FLUORESCENT GAS ANALYZER

Denis A. Helm, West Roxbury, and William J. Zolner, Westford, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Sept. 10, 1973, Ser. No. 395,408
Int. Cl. G01t 1/00
U.S. Cl. 250—365 **11 Claims**



1. Apparatus for measuring the concentration of a fluorescent constituent in a gaseous sample, said apparatus comprising:

a sample chamber provided with means for introducing a sample into the chamber;

a gaseous discharge flash-tube optically coupled to said chamber along a first axis for illuminating a sample therein with radiant energy, said flashtube being provided with energy storage means which can provide to said flashtube a momentary current pulse of high intensity and supply means for recharging said energy storage means between flashes;

timing means for repetitively flashing said tube at intervals which are relatively long as compared with the flash duration;

a photodetector optically coupled to said chamber along an axis transverse to said first axis for detecting fluorescent radiant energy given off by a sample in said chamber and for generating an electric current signal responsive to said detected energy, said photodetector being provided with filter means for confining detected energy to a second predetermined wavelength region;

circuit means for integrating said signal over the duration of each flash to generate a sample signal responsive to the fluorescent energy given off by the sample during the flash;

means for resetting said integrating means between successive flashes; and

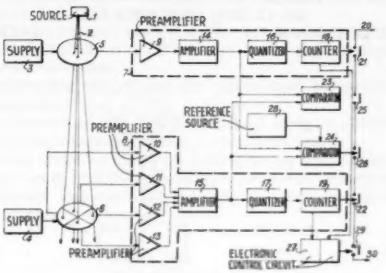
means for sampling said sample signal substantially at the end of each flash and before resetting for generating a continuous output signal which substantially follows the successive sample signal values.

3,845,310
SAFETY SYSTEM FOR TARGET IRRADIATING DEVICE

Claude Perraudin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 5, 1972, Ser. No. 241,117
Claims priority, application France, Apr. 13, 1971, 71.13519
Int. Cl. G01t 1/18
U.S. Cl. 250—385 **5 Claims**

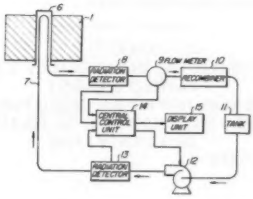
1. A safety system for preventing the irradiation of a target by a particle beam from rising above a predetermined reference level, said system comprising: two ionization chambers positioned on the propagation path of said beam, for providing signals proportional to the instantaneous radiation propagation therethrough, said chambers having respective outputs; two monitoring systems respectively connected to said outputs, each monitoring system comprising means for measuring the output signal applied thereto from one of said chambers; and means for switching off said beam upon one of said signals exceeding a value corresponding to said predetermined reference radiation level.



3,845,311
APPARATUS FOR MEASURING NEUTRON FLUX

Masaaki Fujii, Sagamihara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 204,825
Claims priority, application Japan, Dec. 4, 1970, 45-106833
Int. Cl. G01t 3/00
U.S. Cl. 250—390 **8 Claims**

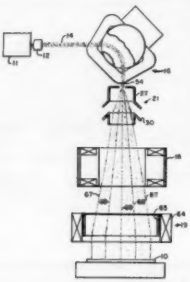


1. An apparatus for measuring the neutron flux power distribution in a nuclear reactor in which the neutron flux distribution is represented by a predetermined function comprising closed circuit means formed by tubing having a uniform inside diameter disposed so as to extend through the reactor core for conveying a fluid in a closed path, means connected to said closed circuit means to supply into and receive from said closed circuit means a liquid containing a neutron detecting material sensitive to radioactivity, means for circulating said liquid through said closed circuit means, means for varying the velocity of said liquid circulating through said closed circuit means over a range of velocities, means for detecting the radioactivity possessed in said liquid before and after it passes through the reactor core, and central control means responsive to the output of said detecting means and the range of velocities of said liquid for determining from said predetermined function the neutron flux power distribution in the reactor.

3,845,312
PARTICLE ACCELERATOR PRODUCING A UNIFORMLY EXPANDED PARTICLE BEAM OF UNIFORM CROSS-SECTIONED DENSITY

Robert William Allison, Jr., Richmond, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 13, 1972, Ser. No. 271,497
Int. Cl. H01j *37/00*; **G01n** *23/00*
U.S. Cl. 250—398 **14 Claims**

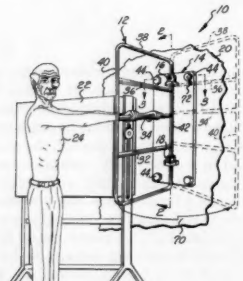


1. A broad beam particle accelerator comprising:
source means for producing a beam of charged particles having a substantially uniform cross-sectional distribution of charged particles,
target area means for supporting at least one target in stationary relationship with said beam,
separator means for directing particles produced by said source means towards said target area and for separating particles from said beam to produce a beam of charged particles having a selected mass range,
means for substantially uniformly expanding the cross-sectional area of said beam having a selected mass range to produce a beam of larger area, and
means for causing said larger area beam to have a substantially uniform particle density over the cross-sectional area thereof at said target area.

3,845,313
APPARATUS FOR USE IN LATERALLY X-RAYING A PATIENT'S TORSO

John Leonard Nosol, 1605 Bell Rd., Chagrin Falls, Ohio 44022

Filed May 7, 1973, Ser. No. 358,133
Int. Cl. G01n *23/00*
U.S. Cl. 250—439 **6 Claims**

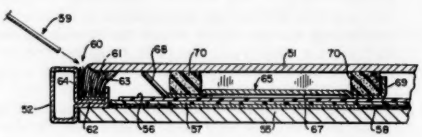


1. Apparatus for use in taking a lateral X-ray of a patient's torso, said apparatus comprising a base, journal bearing means carried by said base, frame means for supporting the arms of the patient in an outstretched orientation during the taking of an X-ray, said frame means including a longitudinally extending rigid support member, means for connecting said support member with said base and enabling said support member to be moved between an inactive position and an active position in which said rigid support member is spaced from the patient's torso by a distance which is approximately equal to the length of the patient's arms, said connecting means including a pivot bar connected to said support member and rotatably mounted in the journal bearing means in said base so that said support member may be pivotally moved between said active and inactive positions, said support member lying in a plane perpendicular to a longitudinal axis of said pivot bar, said connecting means further including means for resisting pivotal movement of said support member relative to said base member when said support member is positioned in its active position, said rigid support member in said active position extending transversely to a central axis of the patient's torso and being disposed at approximately the same level as the patient's shoulders to enable the patient to grasp said support member to thereby support the patient's arms in an outstretched orientation during the taking of a lateral X-ray.

3,845,314
X-RAY FILM IDENTIFICATION MEANS

William H. Byler, Landing, N.J.; Halsey L. Raffman, Brooklyn, N.Y., and Frank Mast, Morristown, N.J., assignors to United States Radium Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 14,024, Feb. 25, 1970, Pat. No. 3,631,243. This application Sept. 16, 1971, Ser. No. 181,060
Int. Cl. G03b *41/16*
U.S. Cl. 250—476 **7 Claims**



1. In an x-ray cassette including a shallow body adapted to enclose film and a slot into which a flat flexible light-emitting unit can be inserted to expose identifying markings on the film; improved guiding means for locating the unit inside the cassette with respect to the film comprising
a. a rigid track within the cassette against which the unit is slideable as it is inserted through the slot,
i. said track facing the enclosed film and lying in a plane parallel thereto, and
ii. said track including an entry lip at one end for directing the unit between the track and the film
b. a resilient pad supporting the track within the cassette for resiliently urging the track against the unit to hold the latter flat against the enclosed film, and
c. means located in the slot to permit entry of the unit but to prevent passage of light into the cassette.

3,845,315
PACKAGING FOR THE TRANSPORTATION OF RADIOACTIVE MATERIALS

Paul Blum, Saint-nom-La-Breteche, France, assignor to Transnucleaire, Societe Pour Les Transports De L'Industries, Nucleaire, France

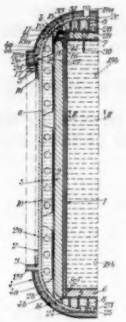
Filed Nov. 15, 1971, Ser. No. 198,556
Claims priority, application France, Nov. 17, 1970, 70.41201; Feb. 2, 1971, 71.03499
Int. Cl. G21f *5/00*
U.S. Cl. 250—506 **13 Claims**

1. Packaging for the shipment and storage of irradiated materials, comprising:

an outer container forming a pressure vessel having a high resistance to physical stresses and having cooling elements on its outer surface.

a gamma ray shield located in the pressure vessel and spaced inwardly from the inside wall of the pressure vessel to define therebetween a space, a liquid in said space, the thickness of the space being large enough such that the liquid therein ensures neutronic protection and evacuation of heat from the gamma ray shield through to the pressure vessel, said gamma ray shield being readily mountable in and removable from said pressure vessel,

at least one leak-tight inner container adapted to contain



the irridiated material and a fluid coolant therein, said inner container being easily mountable in and removable from the interior of said gamma ray shield,

spacing means in said space for fixing the position of the gamma ray shield when it is in the pressure vessel and means securely positioning said inner container when located within the gamma ray shield such that the orientation of the pressure vessel, the gamma ray shield and the inner container remains the same regardless of the orientation of the pressure vessel, whereby the packaging is operable for properly carrying the gamma ray shield and its contents in either a horizontal or a vertical position.

3,845,316

RADIATION RESISTANT CONTAINER

Al Tureck, 3728 W. Enfield Ave., Skokie, Ill. 60076

Filed Mar. 21, 1973, Ser. No. 343,557

Int. Cl. G21f 1//12

U.S. Cl. 250—519 **7 Claims**

1. A radiation resistant container,

said container fabricated from layers of sheets laminated together to form a single laminate,

one of said sheets being impervious to radiation of the x-ray type,

a first plastic sheet laminated to one side of said sheet of radiation impervious material,

a second plastic sheet laminated to the other side of said sheet of radiation impervious material,

said single laminate having first and second spaced apart ends, a top and a bottom,

said single laminate being folded so that at least an inch of the first plastic sheet at the ends of said single laminate abut each other,

said abutting ends of said first plastic sheet being sealed together,

the bottoms of said first plastic sheet being in a sealed abutting relationship for at least an inch, and

holding means for removably holding the top folded over by at least an inch and contiguous to the rest of the laminate thereby forming a bag that can be closed to prevent radiation from entering therein.

3,845,317

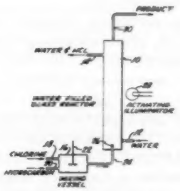
APPARATUS FOR CHLORINATING SATURATED HYDROCARBONS

Richard C. Lindwall, and Richard E. Crocker, both of Anaheim, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 703,838, Jan. 18, 1968, Pat. No. 3,654,107. This application July 28, 1971, Ser. No. 166,677

Int. Cl. B01j 1//10

U.S. Cl. 250—527 **3 Claims**



1. An apparatus for chlorinating hydrocarbons and the like comprising:

a vertical elongated reaction vessel, at least a portion of the wall thereof being transparent to reaction-initiating light; water inlet means proximate the bottom of said reaction vessel;

water and hydrochloric acid outlet means below the top of said reaction vessel;

a mixing vessel having chlorine inlet means and hydrocarbon feed inlet means for premixing chlorine and hydrocarbon reactants, in the absence of light, to form a homogeneous mixture of reactants;

conduit means to pass the premixed reactants to a globule forming means, said globule forming means being in and proximate the lower portion of said reaction vessel to disperse globules of reactant suspended in upward flowing water;

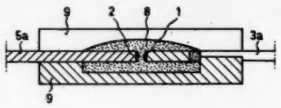
illuminating means for exposing the reaction vessel contents to reaction-initiating light; and

means above the water and hydrochloric acid outlet means for removing an organic reaction product phase.

3,845,318
PHOTOCOUPLING DEVICE HAVING THE TRANSMITTER AND RECEIVER MOUNTED ON OPPOSING EDGES OF ALIGNED LUGS

Jacques Claude Thillays, Herouville-St-Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 296,267, Oct. 10, 1972, abandoned. This application Jan. 18, 1974, Ser. No. 434,493
Claims priority, application France, Oct. 8, 1971, 71.36317
Int. Cl. H01j 39/12
U.S. Cl. 250—551 4 Claims

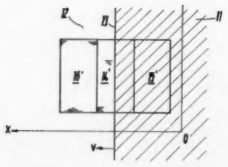


1. A photocoupler device, comprising:
first and second spaced lugs having respectively first and second flat major surfaces lying in the same plane and having respectively first and second flat side surfaces perpendicular to said plane and oriented substantially parallel to and at least in part facing each other;
a semiconductor phototransmitter having two flat substantially parallel major surfaces, one major surface of which may be caused to emit electromagnetic energy and the other major surface of which is mounted on and supported thereby parallel to said first side surface for transmitting light energy toward said second side surface;
a semiconductor photosensitive receiver having two flat substantially parallel major surfaces, one major surface of which is sensitive to said light energy and the other major surface of which is mounted on and supported thereby parallel to said second side surface in optical alignment with said phototransmitter for receiving light energy from said phototransmitter; and
light transparent supportive material encapsulating said phototransmitter, photosensitive receiver and a portion of each of said lugs mounted thereto.

3,845,319
METHOD AND APPARATUS FOR THE ACCURATE DETECTION OF THE PASSAGE OF THE EDGE OF A STRAIGHT CONTRAST JUMP

Arthur Walter, Denzlingen, Germany, assignor to Erwin Sick

Continuation-in-part of Ser. No. 298,367, Oct. 17, 1972, abandoned. This application July 30, 1973, Ser. No. 383,555
Claims priority, application Germany, Oct. 22, 1971, 2152732
Int. Cl. G08c 9/06
U.S. Cl. 250—555 15 Claims

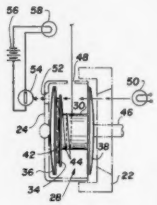


1. A method for accurately detecting the passage of a contrast edge between first and second fields having unequal detectable brightness and moving past contrast sensing means where the edge extends essentially at right angles to the direction of movement of the edge, the steps comprising: concurrently measuring the brightness value of a first area in which the contrast edge is exhibited, of a second area in advance of the first area and of a third area subsequent to the first area, considered in relation to the direction of movement of the contrast edge, producing a total signal proportional to the absolute value of the sum of the brightness values of the second and third areas less twice the brightness value of the first area; and producing an output signal indicative of the passage of the contrast jump into said first area when the value of said total signal falls below a predetermined first threshold value, the value of the total signal as the edge traverses the first area being independent of the ratio of detectable brightness between the first and second fields.

3,845,320
METHOD AND MEANS FOR DETECTING THE APPROACHING END OF A THREAD AND A BOBBIN THEREFOR

Ragnar William Winberg, 94 Searing Ave., Mineola, N.Y. 11501

Filed Mar. 26, 1973, Ser. No. 344,743
Int. Cl. G01b 7/12
U.S. Cl. 250—571 6 Claims



1. In an apparatus for indicating the approaching end of a thread wound on a rotatable bobbin,
said bobbin comprising two outer walls and a partition wall spaced therebetween such that a first portion of thread may be wound between one of said walls and said partition separate and contiguous with a second portion of the thread wound between the second of said walls and said partition,
at least said one wall enabling the passage of light therethrough to sense the presence of thread wound between said one wall and said partition,
a sensor comprising a source of light directed substantially perpendicular to the windings of the thread to pass light through said one wall and through said space between said one wall and partition substantially perpendicular to the windings of the thread and light detecting means to sense the light passing through the space between said one wall and said partition,
and indicator means connected with said light detecting means to indicate the intensity of light passing through the space between said one wall and partition as the thread unwinds therefrom.

3,845,321
ALTERNATOR POWER SOURCE

Raymond R. Santilli, P.O. Box 1032, Oklahoma City, Okla. 73101

Continuation-in-part of Ser. No. 235,281, March 16, 1972, Pat. No. 3,761,727. This application Sept. 13, 1973, Ser. No. 397,188
Int. Cl. H02p 9/04
U.S. Cl. 290—40 6 Claims

1. A vehicle operated power source in combination with an accelerator equipped internal combustion engine driving

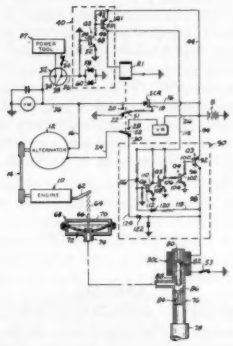
an alternator and having its power output and field winding connected with the vehicle battery by wiring, the improvement comprising:

a gate controlled rectifier connected in series in the alternator to battery wiring;

a relay having a coil and having one end of its coil grounded, said relay having a magnetic switch normally connecting the alternator output potential to the gate of said controlled rectifier to render the latter conductive;

a normally open circuit connected in series with said alternator power output,

said circuit including a pair of power output terminals, one said power output terminal being connected with said alternator power output;



current sensing means connected with the other power output terminal and connecting the other end of the coil of said relay with said battery for energizing said relay when said normally open circuit is closed;

a solenoid having one end of its coil grounded;

electronic switch means connecting the other end of the coil of said solenoid with said battery and said current sensing means,

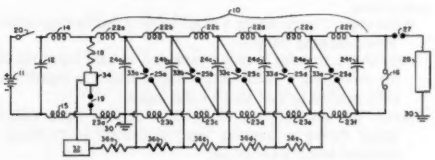
said solenoid being energized when said normally open circuit is closed and being operatively connected with said accelerator for moving said accelerator in an engine accelerating direction; and,

means bridging said power output terminals for energizing said relay and said solenoid.

3,845,322
PULSE GENERATOR

Harlan Keith Aslin, Livermore, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed July 3, 1972, Ser. No. 268,639
Int. Cl. H02m *3/18*
U.S. Cl. 307—108 **21 Claims**



1. A pulse generator comprising

a Marx generator network comprising a plurality of series and parallel connected inductances and capacitances having a power supply end and a switch end,

a supply of voltage and current connected to said power supply end,

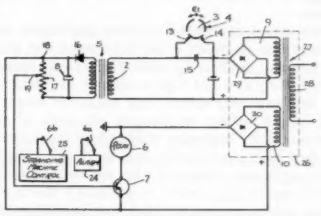
means for initiating a cancellation traveling wave through said network beginning at said switch end and ending at said power supply end to charge said capacitors, and

means for discharging said capacitors through a load.

3,845,323
MONITORING DEVICE FOR MONITORING THE SUPPLY OF FILAMENTS AND/OR TAPES TO ELECTRIC CABLE STRANDING MACHINES

Aldo Bellasio, Milan, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed June 7, 1973, Ser. No. 367,868
Claims priority, application Italy, June 22, 1972, 26025/72
Int. Cl. H01h *35/06*
U.S. Cl. 307—120 **11 Claims**

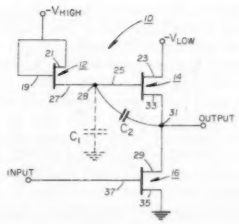


1. In electric cable manufacturing apparatus comprising a source of a filament for said cable and means for physically processing said filament in the manufacture of said cable and to which said filament is fed from said source, the combination therewith of a monitoring device for monitoring the feed of the filament from the source thereof to said means, said device comprising generating means controlled in accordance with the movement of said filament for generating a pulsating direct current dependent upon the movement of said filament and having a direct current component and an alternating current component, signal means responsive to said alternating current component and transfer means which transfers alternating current but blocks direct current connected to said generating means and said signal means for transmitting the alternating current component of said pulsating current from said generating means to said signal means without transmitting the direct current component of said current.

3,845,324
DUAL VOLTAGE FET INVERTER CIRCUIT WITH TWO LEVEL BIASING

Charles A. Feucht, S. Elgin, Ill., assignor to Teletype Corporation, Skokie, Del.

Filed Dec. 22, 1972, Ser. No. 317,579
Int. Cl. H03k *19/40*
U.S. Cl. 307—205 **5 Claims**



1. A logic circuit having input and output terminals comprising:

first switching means having first and second terminals with a variable resistive path defined therebetween, and an actuable control terminal for selectively switching said path from a first state exhibiting a relatively high value of resistance to a second state exhibiting a relatively low value of resistance, said first terminal being connected to the output terminal, said second terminal being connected to a circuit ground return, and said control terminal being connected to the input terminal,

a first voltage source producing a substantially constant low level bias voltage,

a field-effect load transistor having source, drain and gate electrodes, respectively, said drain electrode being connected to said first low level voltage source and said source electrode being connected to the output terminal, a second substantially constant voltage source for producing on the gate electrode of said load transistor a bias voltage at a level higher than that of said first voltage source,

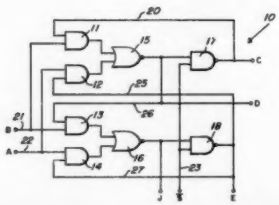
capacitor means connected between said source electrode and said gate electrode of said load transistor, and having charging and discharging states respectively responsive to the relatively low and high resistance switching states of said first switching means, said capacitor means feeding back output voltage to the gate electrode of said load transistor at the beginning of each high resistance state of said first switching means, said feedback voltage being sufficient, when combined with the voltage supplied by said second voltage source, to produce a substantial overdriving gate-to-source electrode voltage differential so as to produce a rapid output signal transition in the direction toward and reaching the voltage level of the drain electrode of said load transistor,

second switching means connected between said second voltage source and said gate electrode of said load transistor for establishing a relatively low resistance interconnection there-between during, and in response to, each successive period when the path of said first switching means exhibits a low resistance state, and for establishing said interconnection as a relatively high resistance during, and in response to, each successive period when the path of said first switching means exhibits a high resistance state.

3,845,325
IGFET FLIP-FLOP HAVING FACILITY FOR FORCING ITS STATE

Richard Gary Daniels, Tempe, and James Walter Foltz, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 23, 1973, Ser. No. 353,831
Int. Cl. H03k *21/00, 3/26*
U.S. Cl. 307—220 C **17 Claims**



1. A bi-stable flip-flop frequency dividing circuit comprised of field effect transistors logically wired to form a first and a second AND-NOR circuit, for providing a bi-level output signal D and a bi-level signal J, respectively, means for connecting output signal D as an input to the second AND-NOR circuit, each of the AND-NOR circuits including input terminal means for receiving bi-level complementary input signals A and B, the dividing circuit providing bi-level output signal C and bi-level signal E, respectively, all of the bi-level signals being designated a binary "1" at one level, and a binary "0" at the other level, the improvement comprising:

a. means for receiving a bi-level state-forcing signal having a binary value of "0" or "1;"

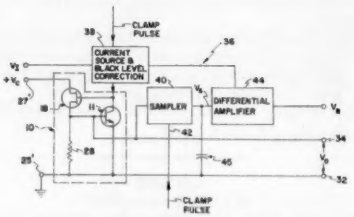
b. first gating means, operatively connected to the output of the first AND-NOR circuit and to the receiving means, responsive to output signal D and to the state-forcing signal for providing a prescribed binary value of output signal C when the state-forcing signal is of a predetermined binary value, signal C serving also as an input signal to the first AND-NOR circuit; and

c. second gating means, operatively connected to the output of the second AND-NOR circuit and to the receiving means, responsive to signal J and to the state-forcing signal for providing a prescribed binary value of signal E when the state-forcing signal is of a predetermined binary value, signal E also serving as an input to each of the AND-NOR circuits.

3,845,326
LOGARITHMIC AMPLIFICATION CIRCUIT

Walter R. Godden, 26 Nightingale Rd., Bushey, England

Filed Aug. 23, 1973, Ser. No. 390,823
Claims priority, application Great Britain, Sept. 1, 1972, 40584/72
Int. Cl. G06g *7/12*
U.S. Cl. 307—230 **12 Claims**



1. In apparatus for processing a video signal having a black level blanking interval, a logarithmic amplification circuit comprising:

input means for receiving a video input signal having a black level blanking interval;

logarithmic transfer means connected to said input means for producing a video output signal which is logarithmically related to said video input signal;

means for sampling the black level of said video output signal during a blanking interval thereof to produce a sampled black level signal;

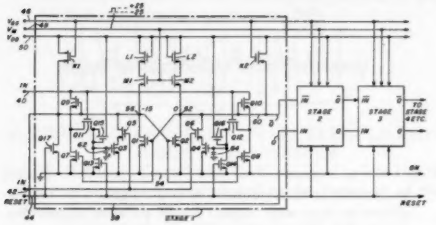
means for comparing said sampled signal with a reference signal and for producing a correction signal as a function thereof; and

means for applying said correction signal to said input means during the blanking interval of said video input signal to correct the black level of said video input signal as a function of said correction signal.

3,845,327
COUNTER WITH MEMORY UTILIZING MNOS MEMORY ELEMENTS

James R. Cricchi, Catonsville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 16, 1972, Ser. No. 281,069
Int. Cl. G11c *11/40*
U.S. Cl. 307—238 6 Claims

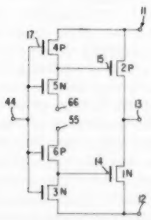


1. In combination, a bistable counter stage comprising a pair of electron valves interconnected such that when one valve conducts the other is cut off and vice versa, a metal-nitride-oxide semiconductor memory device and a load element connected in series with each of said valves such that current can flow through a valve and thence between the source and drain of a memory element to said load element, each of said memory elements being capable of storing at a nitride-oxide interface electronic states representative of a conducting or non-conducting condition of its associated electron valve, means for applying a pulse to the gate electrodes of said memory devices after each change of state of said bistable stage to clear the previously stored electronic states at the nitride-oxide interfaces of the respective memory devices, and means for preventing feedthrough of said pulse to said bistable stage, said last-mentioned means including a region of reduced thickness in a silicon dioxide layer between the source and drain regions of each of the memory elements.

3,845,328
TRI-STATE LOGIC CIRCUIT

Richard James Hollingsworth, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1973, Ser. No. 332,023
Claims priority, application Great Britain, Oct. 9, 1972, 46478/72
Int. Cl. H03k *17/00*
U.S. Cl. 307—251 4 Claims

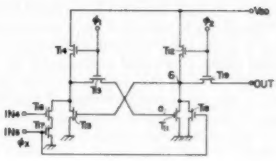


1. In combination:
first and second circuit points across which an operating potential may be applied;
first and second control terminals for receiving complementary binary valued control signals;
a circuit output terminal;
three pair of complementary transistors, each transistor having a conduction path and a control electrode, the conduction paths of the first pair being connected in series between said first and second circuit points and the midpoint of the series connected paths connected to said circuit output terminal, the conduction paths of the second pair being connected in series between said first circuit point and said first control terminal with the midpoint of the series connected paths connected to the control electrode of one transistor of the first pair, the conduction paths of the third pair being connected in series between said second circuit point and said second control terminal with the midpoint of the series connected paths connected to the control electrode of the other transistor of said first pair; and
a circuit input terminal connected to the control electrode of each transistor of the second and third pair of transistors.

3,845,329
FLIP-FLOP CIRCUIT

Kosei Nomiya, 2-47-16 Eifuku, Suginami-ku, Tokyo, and Hiroto Kawagoe, 1211 Gakuennishi-machi, Tokyo, both of Japan

Filed Mar. 27, 1973, Ser. No. 345,474
Claims priority, application Japan, Mar. 27, 1972, 47-29729
Int. Cl. H03k *3/286*
U.S. Cl. 307—279 8 Claims

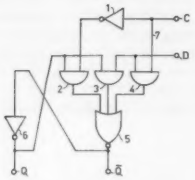


1. A flip-flop circuit comprising: a bias voltage source, a first field effect transistor having its output electrode connected by a first load resistance means to said bias voltage source; a second field effect transistor having its output electrode connected by a second load resistance means to said bias voltage source and its input electrode connected to the output electrode of said first field effect transistor; a third field effect transistor connected between the input electrode of said first field effect transistor and the output electrode of said second field effect transistor; a fourth field effect transistor connected in parallel to said first field effect transistor; a fifth field effect transistor and a sixth field effect transistor connected in series to each other and in parallel to said second field effect transistor; and a seventh field effect transistor connected to the output electrode of said first field effect transistor; first means for applying a first pulse signal to the input electrode of said third field effect transistor, second means for applying a second pulse signal substantially synchronized with said first pulse signal to the input electrode of one of said fifth and sixth field effect transistors and to the input electrode of said fourth field effect transistor, third means for applying an input signal to the input electrode of the other of said fifth and sixth field effect transistors, and fourth means for applying a third pulse signal having its phase different from that of said first pulse signal to the input electrode of said seventh field effect transistor.

3,845,330
BISTABLE ELECTRONIC CIRCUIT

Celio Trinca Colonel, Bregnano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Continuation of Ser. No. 139,334, May 3, 1971, abandoned. This application Sept. 11, 1972, Ser. No. 288,191
Int. Cl. H03k 3/286
U.S. Cl. 307—289 12 Claims



1. A bistable electronic circuit of the flip-flop latch type comprising, in combination: a data input terminal for supplying a data signal, a first clock input point for supplying a clock signal, a second clock input point for supplying an inverted clock signal, at least one data output terminal for delivering data in inverted logical sense, first, second and third circuit elements for performing the logical AND function, each of said circuit elements having at least two input terminals and an output terminal; a fourth circuit element for performing the logical NOR function, said fourth circuit element having three input terminals and one output terminal, a fifth circuit element for performing a logical inversion, said fifth circuit element having at least one input terminal and one output terminal, the two input terminals of said first circuit element being connected respectively to said data input terminal and to said first clock input point, the two input terminals of said second circuit element being connected respectively to the second clock input point and to the output terminal of said fifth circuit element, the two input terminals of said third circuit element being connected respectively to said data input terminal and to the output terminal of said fifth circuit element, the output terminals of said first, second and third circuit elements being connected respectively to one of the input terminals of said fourth circuit element, and the output terminal of said fourth circuit element being connected to said data output terminal and being directly connected to a first input terminal of said fifth circuit element for controlling the state of said fifth circuit element in substantially direct response to operation of said fourth circuit element independently of the data signal.

3,845,331
ARRANGEMENTS FOR BIASING THE SUBSTRATE OF AN INTEGRATED CIRCUIT

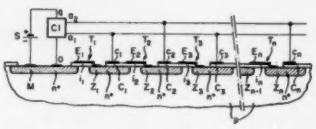
Jakob Luscher, Carouge/Geneve, Switzerland, assignor to Battelle Memorial Institute, Carouge/Geneve, Switzerland

Filed June 26, 1973, Ser. No. 373,872
Claims priority, application Switzerland, June 27, 1972, 9644/72
Int. Cl. H01l 11/14
U.S. Cl. 307—304 2 Claims

1. In combination:

an integrated circuit having a substrate made of semiconductor material of one type of conductivity in which there are integrated n insulated gate field effect transistors each having a source region, a drain region, and a gate connected to the said drain region, the source regions of the said n field effect transistors being formed respectively by n zones of semiconductor material of opposite type of conductivity to the said substrate, the drain regions of the first to n-1th field effect transistors being formed by the second to nth zones respectively, and the drain region of the nth field effect transistor being formed by an n+1th zone of semiconductor material of the said opposite type of conductivity, the second to n+1th zones being capacitively coupled respectively with n electrodes; and

signal-generation circuitry having m outputs and operative



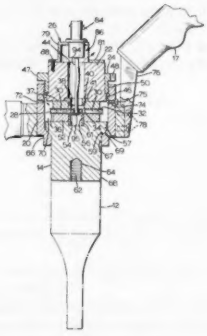
to provide at each output a periodic signal which is displaced in time with respect to the periodic signals provided at the other outputs;

each of the said n electrodes being connected to one of the said m outputs of the signal-generation circuitry, the said m outputs being connected to respective electrodes in each group of m consecutive electrodes formed from the n electrodes.

3,845,332
ULTRASONIC MOTOR

Anthony J. Last, Oakville, Ontario, Canada, assignor to Ontario Research Foundation, Ontario, Canada

Continuation-in-part of Ser. No. 113,298, Feb. 8, 1971, abandoned. This application Mar. 14, 1972, Ser. No. 234,612
Int. Cl. H04r 17/00
U.S. Cl. 310—8.7 10 Claims



1. An ultrasonic motor comprising:

transducer means,

a rear stub in surface contact with said transducer means,

a front stub in surface contact with said transducer means, and being made of a material chosen from the group consisting of magnesium and magnesium alloy,

means for exciting the transducer means such that the ultrasonic motor vibrates in its fundamental mode,

a substantially cylindrical housing having means for clamping said front and rear stubs axially together, the clamping locations on said stubs being immediately adjacent the transducer means and spaced from an anti-node so that a major portion of each stub extends axially beyond its clamping location in the direction away from the transducer means,

the front stub having an outwardly and rearwardly flaring flange with a substantially frusto-conical bearing face, the cylindrical housing having a frusto-conical bearing surface complementary to said bearing face adapted to grip the front stub through said bearing face.

3,845,333

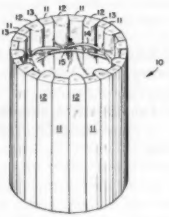
ALTERNATE LEAD/CERAMIC STAVE FREE-FLOODED CYLINDRICAL TRANSDUCER

Jack W. Holloway, Chula Vista, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 27, 1973, Ser. No. 401,320

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.5 **5 Claims**



1. A transducer of acoustic energy having broadband frequency response comprising:

a plurality of polarized, elongate, stave-shaped ferroelectric elements arranged in a cylindrical shell configuration;

a pair of electrical conductors suitably coupled to electrically interconnect said polarized ferroelectric elements in parallel;

means disposed on said pair of electrical conductors for providing electrical insulation therefor; and

a plurality of elongate loading members each interposed between and bonded onto separate pairs of said polarized ferroelectric elements, said loading members having a cross-sectional configuration made up of a rectangular portion interposed between said pairs of polarized ferroelectric elements and an integrally joined semi-circular portion extending radially inwardly to change the symmetry and geometry of said cylindrical shell, said loading members also being formed from a material having a density and mass for lowering the frequency band attributed to the circumferential resonance mode, said polarized ferroelectric elements and said loading members being dimensioned to provide a bandwidth attributed to the cavity resonance mode adjacent and below said frequency band of said circumferential resonance mode, and said polarized ferroelectric elements and said loading members having sufficient lengths to create a passband attributed to the bending resonance mode adjacent and above said frequency band of said circumferential resonance mode, said bandwidth, said frequency band, and said passband cooperating to provide said broadband frequency response over two octaves.

3,845,334

D.C. MOTOR ARRANGEMENT

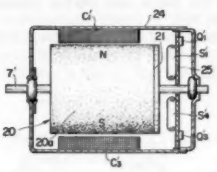
Hideki Harada; Keitaro Yamashita; Takehiko Sagara, all of Kumagaya; Sadahiro Oyama, Chigasaki; Takamichi Fujitsuka, Tachikawa; Tamotsu Sekino, Chigasaki, and Masanori Takanashi, Ichikawa, all of Japan, assignors to Mitsumi Electric Co., Ltd. and Hitachi Metals Ltd., both of Tokyo, Japan

Filed Nov. 24, 1972, Ser. No. 309,485

Claims priority, application Japan, Nov. 24, 1971, 46-94256; Feb. 14, 1972, 47-15354; Sept. 7, 1972, 47-89693

Int. Cl. H02k *1/22*

U.S. Cl. 310—46 **4 Claims**



1. A dc motor comprising:

a. rotatable magnetic rotor means;

b. stationary armature means;

c. a plurality of magnetically responsive switching means positioned radially and circumferentially around the axis of said rotor means, for controlling the energization of said armature means; and,

d. magnetic means positioned in proximity to said switch means and rotatable about the axis of said rotor means, for operating said switching means wherein the rotation of said rotor means rotates said magnetic means such that said magnetic means sequentially operates said switching means thereby energizing said armature means in a predetermined sequence, said magnetic means comprising the end face of said rotor means and a shield means covering a portion of said end face of said rotor means for shielding the switching means from the magnetic field of the covered portion of said rotor means wherein said switching means are operated only by the portion of said rotor means which is not shielded by said shield means.

3,845,335

ELECTROMAGNETIC STEPPING MICROMOTOR

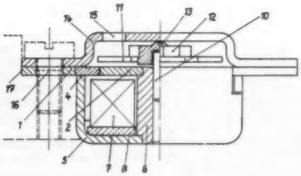
Henri J. Oguey, Peseux, Switzerland, assignor to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Aug. 6, 1973, Ser. No. 385,717

Claims priority, application Switzerland, Aug. 30, 1972, 12794/72

Int. Cl. H02k *37/00*

U.S. Cl. 310—49 **7 Claims**



1. Electromagnetic stepping micromotor for timepieces comprising a rotor in the form of at least one disc having magnetized parts and a stator of soft ferromagnetic material

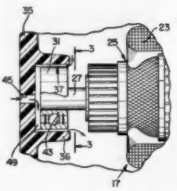
having two parts presenting a coplanar surface towards the rotor, the parts being separated from each other by a sinuous air-gap, wherein the rotor is flat and includes at least one wheel having a plurality of teeth equidistant from each other, said teeth being axially magnetized in the same direction, the air-gap of the stator being narrow in relation to the width of the teeth of the rotor and presenting a number of radial segments equiangularly equidistant from each other and equal to twice the number of rotor teeth.

3,845,336

BEARING AND HOUSING CONSTRUCTION

Robert G. Moores, Jr., Cockeysville; Leo A. McCafferty, Jr., Baltimore, and Leonard U. Alsruhe, Towson, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Oct. 1, 1970, Ser. No. 77,113
Int. Cl. H02k *9/00*
U.S. Cl. 310—52 **9 Claims**



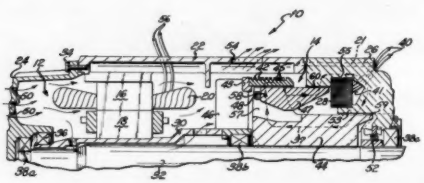
1. An electric motor comprising a housing including a member constructed of electrically insulating, low thermal conductivity material, a stationary field supported within said housing, a rotatable armature supported within said field and including an armature shaft, a fan driven by said motor and adapted to draw cooling air through said motor, a bearing rotatably supporting said armature shaft, said housing member having a recess defined by a generally annular surface having arcuately spaced slots therein, said bearing being snugly receivable within said recess and adapted to engage said annular surface, said slots extending the entire axial length of said bearing and communicating with said fan, opening means of said housing member communicating the atmosphere with said slots, whereby said cooling air is drawn through said opening means and said slots and over said bearing.

3,845,337

ELECTROMAGNETIC COUPLING HAVING AN END MOUNTED FIELD

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1972, Ser. No. 317,552
Int. Cl. H02k *49/02*
U.S. Cl. 310—105 **10 Claims**



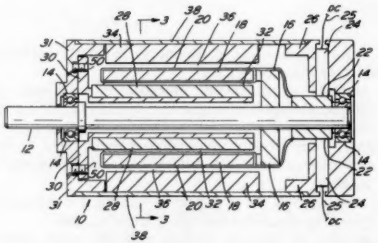
1. An electromagnetic coupling comprising a longitudinally extending housing, a single piece end section member for enclosing an end of said housing including a first portion having a substantially cylindrical configuration and longitudinally extending with said longitudinally extending housing and having an end portion disposed substantially perpendicularly to said first portion, means for connecting said first portion of said end section to one end of said longitudinally extending housing to establish a contiguous relation therebetween, a motor inside said housing, an eddy current drum rotatable by said motor, a load output shaft extending through said end section of said housing, a rotor assembly affixed to said load output shaft to rotate therewith, a field coil assembly mounted proximately to said rotor assembly and said eddy current drum to electromagnetically couple said drum and said rotor assembly by establishing a flux path from said field coil assembly through said end section, through said rotor assembly, through said eddy current drum, through said rotor assembly and through said end section to said field coil assembly, said field coil assembly when energized providing rotation of said load output shaft in response to rotation of said eddy current drum, said end section of said housing having formed therein a pair of annular spaced apart shoulder portions extending substantially parallel with said longitudinal housing to form an annular cavity in said end section, and said annular shoulder portions supporting said field coil assembly in said annular cavity with said field coil assembly being mounted directly to said end section of said housing.

3,845,338

DIRECT CURRENT SHELL ARMATURE MOTOR

Moharram M. Fawzy, North Wales, Pa., assignor to Transicoil, Inc., Worcester, Pa.

Filed Feb. 20, 1974, Ser. No. 444,073
Int. Cl. H02k *21/28*
U.S. Cl. 310—154 **5 Claims**

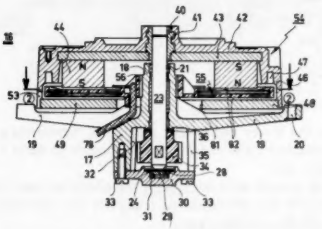


1. Apparatus for direct current dynamoelectric use, comprising: a rotatable shaft; a permeable magnetic armature shell co-axial with and secured to said shaft, said armature shell being provided with coils toroidally wound thereon; an inner magnet radially magnetized disposed co-axial with said shaft between said shaft and said armature shell; a magnetic inner core comprising permeable magnetic material disposed to function as a magnetic return path for said inner magnet; said inner magnet, armature shell and inner core comprising a first magnetic circuit; an outer magnet disposed outside and co-axial with said armature shell, said outer magnet being radially magnetized oppositely to said radially magnetized inner magnet; a magnetic yoke comprising permeable magnetic material disposed to function as a magnetic return path for said outer magnet; said outer magnet, armature shell and yoke comprising a second magnetic circuit; and, commutator means, said commutator means being adapted to supply to or receive from said armature shell coils a direct current.

3,845,339
PERMANENT MAGNET ROTOR ELECTRIC MOTOR

Alfred Merkle, St. Georgen; Fritz Schmieder, Hornberg, and Werner Heinzmann, St. Georgen, all of Germany, assignors to Papst-Motoren KG, St. Georgen/Black Forest, Germany

Filed Aug. 31, 1972, Ser. No. 285,520
Claims priority, application Germany, Sept. 1, 1971, 2143752
Int. Cl. H02k 21/12
U.S. Cl. 310—156 14 Claims



1. A collectorless DC motor for driving signal recording devices and signal reproducing devices, comprising, in combination, a stator comprising a central support portion provided with a mounting passage, an outwardly extending mounting member for mounting the motor on a structural support, and an axial bearing portion, said stator additionally comprising a generally plate-shaped winding arrangement fixedly mounted on said support portion and surrounding said passage; a rotor comprising a rotor shaft extending through said passage transversely through said winding arrangement so as to be encircled by the latter and having an end bearing axially upon said axial bearing portion, an axially polarized permanent magnet arrangement encircling said shaft, said winding arrangement and said magnet arrangement having facing first axial sides axially spaced to define a first axial air gap and having opposite second axial sides, a first magnetic return structure encircling said shaft and located adjacent said second axial side of said magnet arrangement, and a second magnetic return structure encircling said shaft and located adjacent to said second axial side of said winding arrangement axially spaced from the latter to define therewith a second axial air gap, said magnetic arrangement and said first and second magnetic return structures being mounted on said shaft for rotation therewith and connected together at the radially outer portions thereof; and output means connected with said shaft at a portion of said shaft axially spaced from said magnetic arrangement and said return structures and operative for transmitting driving force from said rotor shaft to a device to be driven by said motor.

3,845,340
DYNAMOELECTRIC MACHINE ROTOR

Kenneth R. Brooks, Dexter; Axaybabu M. Dave, Ypsilanti, both of Mich., and Tushar D. Kothari, Bombay, India, assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1973, Ser. No. 355,998
Int. Cl. H02k 1/06
U.S. Cl. 310—217 8 Claims

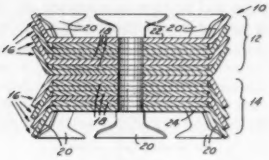
1. A laminated rotor or armature core for a dynamoelectric machine comprising in combination:

a plurality of nesting lamina members, each having a plurality of radially directed finger elements; and

a plurality of flux gathering portions, having both a radial and an axial extent, connected to axially alternate ones of the radially directed fingers the plurality of lamina members comprising:

a plurality of first lamina members having a central segment and a plurality of radially directed finger elements, each of said first lamina finger elements terminating in a flux gathering portion;

said flux gathering portions being angularly displaced with respect to the plane of the central segment and radially directed finger elements; and

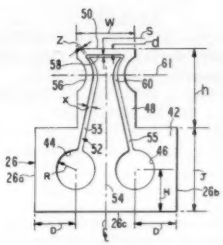


a plurality of substantially planar second lamina members having a central core and a plurality of radially directed finger elements, each of said second lamina members interposed between a pair of first lamina members.

3,845,341
ACTIVELY COOLED ANODE FOR CURRENT-CARRYING COMPONENT

John F. Addoms, Rocklin, Calif., and Donald W. Culver, Richland, Wash., assignors to Aerojet General Corporation, El Monte, Calif.

Filed Aug. 1, 1973, Ser. No. 384,647
Int. Cl. H01j 7/24
U.S. Cl. 313—32 26 Claims



1. An anode for a current-carrying electronic component comprising: an assembly comprised of a plurality of plates bonded together in a stack to form an external, current-receiving working surface and an internal fluid passage having a segment in proximity to said working surface, the thickness of the assembly being a number of times less than the length of the working surface; and means defining a fluid manifold coupled to the assembly in fluid communication with said fluid passage, said manifold adapted to be coupled to a source of a coolant under pressure so that the coolant can be directed into the passage and through said segment and thereby into substantial heat exchange relationship to said working surface.

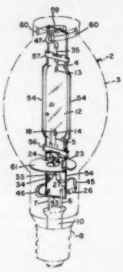
3,845,342
ELECTRIC DISCHARGE DEVICE CONTAINING THORIUM, MERCURY AND IODINE

John F. Waymouth, Marblehead, and Frederick Koury, Lexington, both of Mass., assignors to Sylvania Electric Products, Inc., Danvers, Mass.

Division of Ser. No. 230,944, Oct. 16, 1962, which is a continuation-in-part of Ser. No. 209,974, July 13, 1962, abandoned. This application Dec. 20, 1973, Ser. No. 426,944
Int. Cl. H01j 61/18
U.S. Cl. 313—184 10 Claims

1. A high pressure discharge device for the emission of white light comprising: an arc tube having electrodes contain-

ing a thorium sliver sealed at either end thereof and a vaporizable fill of iodine, mercury and thorium atoms, said iodine and mercury respectively being present therein at a ratio of 0.10 to 0.85 and said mercury being present in sufficient quantities to be completely vaporized at normal operating temperatures of said arc tube and to form a restricted arc therein, said thorium being present in quantities of 2.6×10^{-7} to 2.6×10^{-6}



gram atoms per centimeter of arc length and characterized in that said white light constitutes substantially a continuum of radiation in the visible spectrum in contrast to a balancing of line spectral emission that has the appearance of white or near-white light.

3,845,343

INSIDE BULB COATING FOR ULTRAVIOLET LAMP

Edward E. Hammer, Mayfield Village, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1973, Ser. No. 356,305
Int. Cl. H01j *61/35*
U.S. Cl. 313—221 **3 Claims**

1. A gas discharge ultraviolet lamp comprising a bult of substantially sodium-free ultraviolet-transmitting glass and containing mercury vapor at low pressure wherein the improvement comprises a layer of non-particulate aluminum oxide (Al_2O_3) on the inner surface of the bulb.

3,845,344

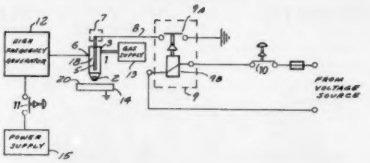
IGNITION APPARATUS FOR A PLASMA BURNER

Rudolf Rainer, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. AG, Vienna, Austria

Filed Sept. 10, 1973, Ser. No. 395,412
Claims priority, application Austria, Sept. 8, 1972, 7700/72
Int. Cl. H01j *7/30*
U.S. Cl. 313—231 **2 Claims**

1. In a plasma burner apparatus including an elongated, electrically conductive chamber for ionizing a plasma- forming gas by subjecting the gas to an electromagnetic field and for igniting the ionized gas by completing an electrical path to ground through the ionized gas via an output nozzle at the lower end of the chamber, an improved arrangement for igniting the ionized gas, which comprises:

an elongated electrode extending longitudinally downward through the chamber in spaced relation with the chamber



walls, the lower end of the electrode terminating within the chamber adjacent the output nozzle to form a working gap; and

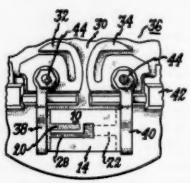
switching means associated with the chamber and operable to ground the electrode to complete the electrical path through the working gap.

3,845,345

FREQUENCY SENSITIVE PREIONIZER

James S. Kresge, Pittsfield, Mass., and Stanley A. Miske, Jr., Elnora, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed July 5, 1973, Ser. No. 376,433
Int. Cl. H01j *17/00, 21/00*
U.S. Cl. 313—325 **5 Claims**



1. A preionizer for a main spark gap formed by a pair of spaced main spark gap electrodes comprising:

a. a base of insulating dielectric material having a first and a second side;

b. a first preionizer electrode of metallic material deposited on the first side of said base and being adapted to be electrically connected to one of the main spark gap electrodes;

c. a second preionizer electrode of metallic material deposited on the second side of said base and being adapted to be connected to the other main spark gap electrode;

d. a plate of metallic material deposited on the first side of said base,

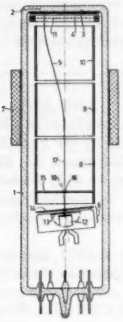
said plate and a portion of said second preionizer electrode and the insulative dielectric material therebetween defining a capacitance,

said plate being spaced from said first preionizer electrode a predetermined distance to form a preionizing spark gap therebetween;

e. a resistive element of resistance material deposited on the first side of said base and electrically interconnected between said plate and said first preionizer electrode,

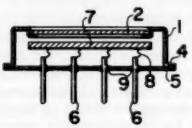
whereby the capacitance is electrically connected in series with a parallel combination of the preionizing spark gap and the resistive element to form a frequency sensitive preionizer.

3,845,346
CATHODE-RAY TUBE
Hans Georg Gerlach, Emmasingel, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.
Filed Jan. 4, 1973, Ser. No. 320,866
Claims priority, application Netherlands, Jan. 19, 1972, 72722
Int. Cl. H01j *29/84*
U.S. Cl. 313—424 2 Claims



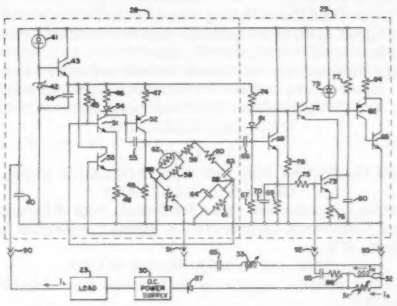
1. A cathode ray tube comprising an electron gun having electrodes centered along a first axis for producing an electron beam with a cross-over on the first axis and electron-optical means centered along a second axis for focusing the electron beam, said first and said second axes intersecting each other at an acute angle, characterized in that the point of intersection of the first axis and the second axis coincides with the cross-over and that the cathode ray tube comprises a diaphragm having an aperture which is centered relative to the second axis, said aperture letting pass less than one quarter of the electron beam, the first axis intersecting the diaphragm outside said aperture.

3,845,347
ELECTRIC DISPLAY TUBE AND ENVELOPE STRUCTURE THEREFOR
Mikiharu Tanji, Ian, Japan, assignor to Ise Electronics Corporation, Ise-City, Mie Prefecture, Japan
Continuation of Ser. No. 198,463, Nov. 12, 1971, abandoned, which is a continuation of Ser. No. 864,666, Oct. 8, 1969, abandoned. This application July 16, 1973, Ser. No. 379,709
Int. Cl. H01j *61/36*
U.S. Cl. 313—483 4 Claims



1. An electric display tube comprising internal display electrode means, means forming a set of external terminals for extending within said tube with their internal ends respectively connected to support said internal electrode means in spaced relation to the interior surfaces of said tube, a metal base in the form of a flat plate provided with perforations through which said terminals extend, electric insulators rigidly sealing said terminals in said perforations, a metal cap enclosing and spaced from said internal display electrode means said cap having a top opening the inner periphery of which is formed with a reentrant flange, a transparent sheet sealed in said opening and supported on said reentrant flange, a peripheral outwardly extending flange formed on said cap, said outwardly extending flange spaced from said window a distance to assure spacing said internal display electrode means from the inner surface of said window, means forming a continuous peripheral bond between said outwardly extending flange and said base, and a partially evacuated atmosphere within the interior of said display tube, atmospheric pressure tending to urge said transparent sheet and said metal base in sealing relation against the respective flanges adjacent thereto.

3,845,348
DIFFERENTIAL PRESSURE TRANSDUCER FORCE MOTOR DRIVE CIRCUIT
John E. Riley, Saugus, Mass., assignor to General Electric Company and Bailey Meter Company, Wickliffe, Ohio
Filed Nov. 1, 1971, Ser. No. 194,394
Int. Cl. G05b *11/01*
U.S. Cl. 318—676 6 Claims



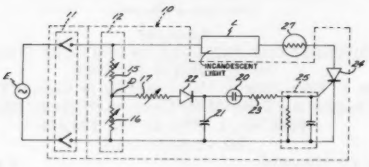
1. In a force balance transducer system including a position detector means, a coil having a variable inductance determined by the position detector means, and a motor means for balancing the transducer, said motor means having a motor winding circuit including a variable resistance connected in electrical parallel with said motor winding, an improved motor drive circuit comprising current amplifier circuit means responsive to the inductance of said coil for supplying a d-c current proportional to said inductance to said motor winding circuit, said circuit means including a negative feedback network connected in electrical series with the motor winding itself for feeding back part of the motor winding voltage to said amplifier circuit so that the frequency response of said motor drive circuit is maintained substantially independent of the value of resistance that is connected across said motor winding.

3,845,349
LINE SYNCHRONIZED STROBE LIGHT
Theodore Liebman, 8201 Henry Ave., Philadelphia, Pa. 19128
Filed Jan. 15, 1973, Ser. No. 323,855
Int. Cl. H05b *37/02*
U.S. Cl. 315—200 A 7 Claims

1. Apparatus for producing light flashes at a predetermined frequency, comprising:
- voltage dropping means adapted to receive an A.C. signal for producing a reduced A.C. signal at a preselected ratio thereof;
- rectifying means connected to receive said reduced A.C. signal for passing signal segments of a predetermined polarity thereof;

capacitive means connected to receive said signal segments for storing an electrical charge corresponding to the accumulated energy of said signal segments;

first switching means connected at one end thereof to said capacitive means and said rectifying means including electrostatic coupling means responsive to said A.C. signal for switching said first switching means into conductive state upon a predetermined combination of the charge on said capacitive means and said A.C. signal;



second switching means connected to be gated to the other end of said first switching means for conducting electrical signals upon being gated by said first switching means; and

lighting means connected in series with said second switching means and in shunt across said A.C. signal for producing light when said second switching means is conducting.

3,845,350

ARRANGEMENT FOR THE CONTROLLABLE SUPPLY OF AN ELECTRIC LAMP

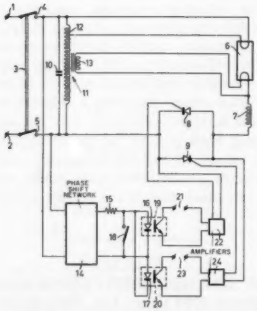
Meerten Luursema, and Pieter Jan Bolhuis, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,925

Claims priority, application Netherlands, Apr. 20, 1972, 7205293

Int. Cl. H05b *41/36*

U.S. Cl. 315—291 **7 Claims**



1. A circuit for controlling the supply of electric energy to an electric discharge lamp comprising, a pair of input terminals adapted to be connected to a source of electric energy, a controlled semiconductor switching element, a first switch, means connecting the discharge lamp and the first switch in series with the controlled semiconductor switching element across said pair of input terminals, a control circuit for the switching element, means connecting a control electrode of the controlled semiconductor switching element to said control circuit, said control circuit including a potential-separating coupling element coupled between a first part of the control circuit which is connected to the control electrode of the semiconductor switching element and another part of the control circuit, means connecting the first part of the control circuit to an auxiliary voltage source, and said coupling element comprises an opto-electronic coupling element including a light-transmitting member and a photosensitive member which is arranged in such a manner that it is free from the influence of the light from the electric lamp, and said control circuit further includes a second switch for selectively extinguishing the light from the light-transmitting member of the opto-electronic coupling element.

3,845,351

METHOD AND APPARATUS FOR THE ADJUSTMENT OF A PLURALITY OF FLOODLIGHTS

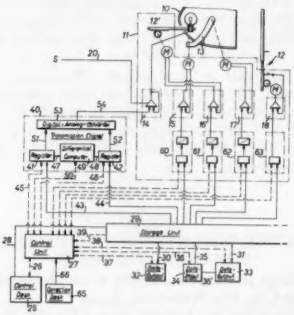
Fritz von Ballmoos, Todistrasse 44, 8810 Horgen; Traugott Grieder, Siegwaldweg 45 4125 Riehen, both of Switzerland; Herbert Grohmann, Alexanderstrasse 158, Stuttgart, Germany, and Rolf Gutmann, Flughafenstrasse 6, 4000 Basel, Switzerland

Filed Mar. 1, 1971, Ser. No. 119,595

Claims priority, application Switzerland, Mar. 5, 1970, 3217/70

Int. Cl. G05f *1/00*; F21p *5/00*

U.S. Cl. 315—293 **1 Claim**

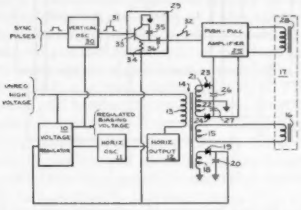


1. Apparatus for adjusting a number of floodlights, especially for the illumination of a stage or studio, comprising a command console for the manual input of signals used for setting the value of different parameters such as azimuth, elevation, brightness, focus and color of the light bundle of each of the floodlights, a storage unit, input and output devices for transferring the content of said storage unit onto a data recording means or to transfer data from a recording means to the storage unit, respectively, a control unit for transforming the signals from the command console into reference values for setting the values of the different parameters into instructions for the sequence of operations in the apparatus, each floodlight being provided with a feedback control system for each parameter, the reference value signal input being connected with the output of at least one register having two inputs, one input of the register being connected with the control unit when adjusting the corresponding parameter by means of the command console, the other input of the register being connected with the storage unit when adjusting the corresponding parameter by means of the stored information, the signals at the output of each register being utilized as reference values for the corresponding feedback control system.

3,845,352
POWER SUPPLY SYSTEM FOR TELEVISION RECEIVER

Robert H. Newman, Norfolk, and Mervyn M. Pluck, Portsmouth, both of Va., assignors to General Electric Company, Portsmouth, Va.

Filed Dec. 21, 1971, Ser. No. 210,411
Int. Cl. H01j *29/70*
U.S. Cl. 315—29 **5 Claims**



1. In a television receiver including a cathode ray tube adapted to produce at least one electron beam therein and having vertical deflection windings disposed adjacent thereto for effecting the deflection of said electron beam in a vertical sense, the combination comprising:

push-pull amplifier means directly coupled to the vertical deflection windings for supplying bi-directional current to said windings;

sawtooth generator means for applying a periodic ramp-like voltage to said push-pull amplifier means;

transformer means having a primary winding formed thereon;

means for applying horizontal scansion signals to said primary windings;

first winding means formed on said transformer means and being poled to respond to said scansion signals of a first polarity with respect to a reference potential;

first rectifier means coupled to said first winding means to transmit a DC supply voltage of said first polarity to said push-pull amplifier means;

second winding means formed on said transformer means and being poled to respond to said scansion signals of a second polarity with respect to a reference potential;

second rectifier means coupled to said second winding means to transmit a DC supply voltage of said second polarity to said push-pull amplifier means;

said first and second rectifiers and said first and second winding means thereby providing a low voltage, high current, bi-polar supply for said push-pull amplifier means.

3,845,353
ELECTRICAL CONDUCTIVE FLOOR TILE AND METHOD FOR MAKING SAME

Sakae Shirai, No. 1823 Nakanoshima, Kawasaki, and Keigo Sasamoto, No. 2100 Yamazakicho, Tokyo, both of Japan

Continuation of Ser. No. 829,870, June 3, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,350
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **6 Claims**

1. An electrically conducting floor tile, comprising:

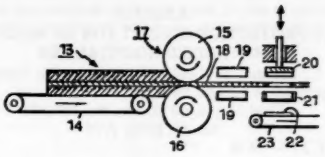
an integral base sheet of non-conductive plastic material of a given color comprised of a plurality of self-adhered layers,

a plurality of individual slugs of plastic material embedded in each layer in a random pattern,

said slugs being of the same thickness as the layer in which they are embedded and of randomly elongated form,

a plurality of electrically conductive particles dispersed throughout each of the slugs including the opposite surfaces thereof forming conductive areas of flake-like appearance and of a different color than the base sheet,

at least some of the conductive areas being in electrical contact and the other of the conductive areas being in

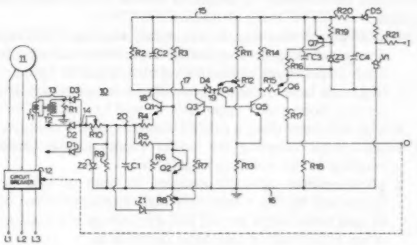


such close proximity to each other and to the at least some of the conductive areas as to form a grounding path for electrical charges between opposite surfaces of the tile.

3,845,354
SOLID STATE THERMAL OVERLOAD INDICATOR

David Richard Boothman, Ennismore, Ontario, and David Walter Nutt, Peterborough, Ontario, both of Canada, assignors to Canadian General Electric Company, Limited, Toronto, Ontario, Canada

Filed May 21, 1973, Ser. No. 362,047
Int. Cl. H02h *7/08, 7/085*
U.S. Cl. 317—13 B **9 Claims**



1. For use in protecting a motor load connected to a power source, a static overload indicator having an inverse operating characteristic closely resembling the thermal damage curve for the motor and having operating times for stall and running overload level which can be preset independently of each other, said indicator comprising a pair of DC buses from another power source; a conductor; electrical analog means having resistance and capacitance means connected between one bus and said conductor and simulating the thermal characteristics of said motor for accounting for heat energy stored therein; means for producing a voltage proportional to the overload; voltage-sensitive indicating means connected to said conductor for producing an indication of a particular voltage thereon; and first and second voltage-dependent current valves each connected between said conductor and the other bus and to the voltage-producing means whereby the voltage on said conductor is a function of said motor current subject to the stored heat energy and equal to said particular voltage for each value of current after a time according to said characteristic has elapsed, said first and second current valve being adjustable for presetting said level and time for said running and stall overloads respectively and said second current valve assisting said first current valve only for overloads greater than

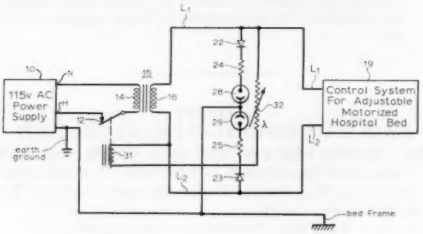
some value of overload between said stall and running overloads so that the running overload level and stall overload time can be preset independently of each other.

3,845,355

FAULT PROTECTION CIRCUIT FOR AN ADJUSTABLE MOTORIZED HOSPITAL BED

Lance C. Lawson, St. Louis, Mo., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 4, 1973, Ser. No. 357,156
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 A **1 Claim**



1. A fault protection circuit for an adjustable motorized hospital bed wherein an AC power supply is coupled, via an isolation transformer, to a control system for the bed, comprising:

a series circuit shunting the secondary winding of the isolation transformer and including, in the order named, a first diode, a first current limiting resistor, a pair of light emitting neon lamps, a second current limiting resistor, and a second diode poled oppositely to said first diode;

a relay for controlling a pair of normally closed contacts in the circuit coupling the power supply to the primary winding of the isolation transformer;

a photo-resistor optically coupled to both of said neon lamps and having a relatively high resistance when both of said neon lamps are off and a relatively low resistance when either one of said neon lamps is on;

means for series-connecting said relay and said photo-resistor across the secondary winding;

and means for grounding the junction of said neon lamps to the conductive frame of the hospital bed,

said relay energizing and opening said normally closed contacts, thereby disconnecting the primary winding from the power supply, any time the failure of a circuit component of the control system results in connecting either terminal of the secondary winding to the bed frame.

3,845,356

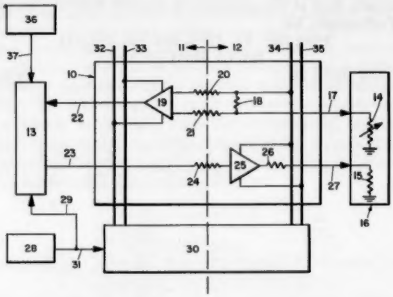
PROCESS CONTROL SYSTEM FOR HAZARDOUS AREAS

Alvan H. Bullard, Norfolk, and William Calder, III, Foxboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 241,545, April 6, 1972, abandoned. This application Jan. 15, 1973, Ser. No. 323,496
Int. Cl. H02h *3/20*
U.S. Cl. 317—20 **10 Claims**

1. An improved process control system of the type normally having control, record and measurement instruments together with a power source in a control room communicating with instruments in a process area, wherein the improvement for adapting the system for use in hazardous areas comprises:

an interface for limiting the current in all signal paths leading to and from the process area, and



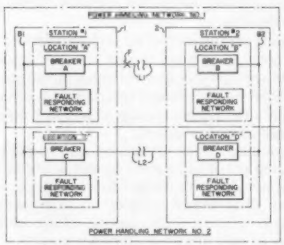
a voltage limiter between the power source and the interface for limiting the voltage supplied to the interface means.

3,845,357

PROTECTIVE RELAYING APPARATUS OF THE UNBLOCK TYPE

John E. Hagberg, Mountain Lakes, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 29, 1973, Ser. No. 364,449
Int. Cl. H02h *7/26*
U.S. Cl. 317—27 R **25 Claims**



1. In a protective relay for protecting a transmission line energized from a station bus through a breaker, a fault detector having an input circuit adapted to be energized with a line condition responsive quantity which varies as a function of an operating condition of the line and having an output circuit the energization of which changes upon the occurrence of an abnormality in said the responsive quantity, an intelligence handling device having a transmitting portion and receiving portion, said output circuit of said fault detector being connected to said transmitting portion for actuation thereof upon the occurrence of an abnormality in said line responsive quantity, a breaker tripping network having an output circuit and first and second and third input circuits, a plurality of timers, each said timer having an input circuit and an output circuit, each said timer being effective to change its output quantity at its said output circuit from an initial quantity to a timed-out quantity at the expiration of a predetermined programmed time interval following a change of an input quantity from a reset quantity to a timing quantity at its said input circuit, said output circuit of said fault detector being connected to provide a timing quantity to said input circuit of a first of said timers when said fault detector detects said abnormality, said output circuit of said first timer being connected to said input

circuit of a second of said second timers and effective to supply said input circuit of said second timer with its said timing quantity upon the occurrence of said timed-out quantity of said first timer and independently of the operation of said receiving portion, said receiving portion being connected to said input circuit of said second timer and effective to provide said second timer with its said timing quantity when said receiving portion receives a first remote control quantity, said output circuit of said second timer being connected to said first input circuit of said breaker tripping network and effective as a consequence of the occurrence its said timed-out quantity to interrupt the supply of a first control quantity to said first input circuit of said tripping network, first circuit means connecting said output circuit of said fault detector to said second input circuit of said breaker tripping network and effective to supply a second control quantity to said second input circuit of said breaker tripping network upon the occurrence of said abnormal line responsive quantity, said third input circuit of said breaker trippig network being connected to said receiving portion, said receiving portion being effective to supply a third control quantity to said third input circuit in response to the reception by said receiving portion of said first remote control quantity, said breaker tripping network being effective to actuate its said output circuit when its said first and second and third input circuits are actuated by said first and second and third control quantities respectively.

3,845,358

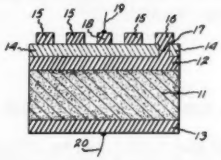
INTEGRATED POLYCRYSTALLINE VARISTOR SURGE PROTECTIVE DEVICE FOR HIGH FREQUENCY APPLICATIONS

Thomas E. Anderson, Normal, Ill., and Francois D. Martzloff, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 29, 1973, Ser. No. 375,132

Int. Cl. H02h *9/04*

U.S. Cl. 317—61 **9 Claims**



1. Apparatus for suppression of voltage surges on VHF signal cables comprising:

a body of varistor material having a pair of opposed faces and an electrode on each of said faces;

a first non-conductive coating overlying one of said electrodes;

an inductor overlying said non-conductive coating; and

means for electrically connecting said one of said electrodes to said inductor.

3,845,359

CIRCUIT BOARD ANCHOR HAVING CONSTRAINED DEFORMABLE STRUT

Daniel E. Fedele, 3007 N. Arlington Ave., Santa Susana, Calif. 93063

Filed Oct. 17, 1973, Ser. No. 407,240

Int. Cl. H02b *1/02*

U.S. Cl. 317—101 DH **10 Claims**

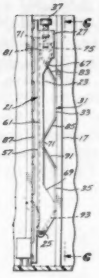
1. A circuit board anchor for anchoring an extremity of a circuit board in a circuit board box and comprising:

an elongated beam formed with an elongated chamber having a back wall and open on its front side;

axial retainers on the opposite ends of said beam forming the end walls for said chamber;

snake shaped deformable strut means projecting axially in said chamber and formed with a hump projecting from the open side of said chamber for engagement with said circuit board and having sufficient flexibility to flex upon axial compression thereof to flex said hump a predetermined distance transversely from said open side; and

an axial compressing device mounted in one of said retainers and operable to compress said strut means axially



inwardly to flex said hump transversely said predetermined distance whereby said beam may be positioned on one side of the margin of said end of said circuit board and said compression device operated to compress said strut means axially to urge said hump transversely outwardly to engage said circuit board and urge it away from said beam to force it against adjacent structure to anchor said end of said circuit board frictionally to said box.

3,845,360

LIGHT-MEASURING CIRCUITS

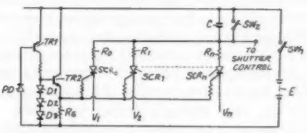
Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 21, 1973, Ser. No. 343,384

Claims priority, application Japan, Mar. 20, 1972, 47-31992

Int. Cl. H01h *47/24*

U.S. Cl. 317—124 **10 Claims**



1. In a light-measuring circuit, at least a pair of electronic switch means each in the form of and SCR, for assuming and memorizing conductive or non-conductive states independently of each other each electronic switch means assuming one of said states when an input thereto is above a given magnitude and the other of said states when an input thereto is below said magnitude, photosensitive input means for responding to light which is to be measured, said photosensitive input means being electrically connected with both of said electronic switch means for transmitting thereto input signals corresponding to the light received by said photosensitive input means, reference voltage input means electrically connected with both of said electronic switch means for transmitting reference voltage input signals thereto, so that each electronic switch means receives an input resulting from the combination of the signal from said photosensitive input means and the signal from said reference voltage input means, one of said input means transmitting a constant signal to both of said electronic switch means and the other of said input means transmitting to both of said electronic switch means stepped signals which differ one from the next by a given increment,

whereby both of said electronic switch means may become conductive or non-conductive or one of said electronic switch means will assume a conductive state while the other remains in its non-conductive state, and output means electrically connected with both of said electronic switch means for transmitting therefrom an output signal determined by whether either one or both of said electronic switch means are in said conductive or non -conductive states.

3,845,361
ELECTRIC LOCKING AND UNLOCKING APPARATUS

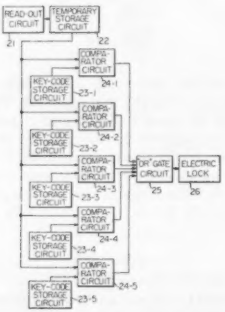
Fumio Watase; Shunsaku Nakauchi; Seiichi Kodera, and Mamoru Namikawa, all of Tokyo, Japan, assignors to Tokyo Magnetic Printing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 335,582, Feb. 26, 1973. This application May 7, 1973, Ser. No. 357,621

Claims priority, applications Japan, May 11, 1972, 47-35892; June 22, 1972, 47-61846; June 22, 1972, 47-61847

Int. Cl. E05b *49/00*

U.S. Cl. 317—134 **1 Claim**



1. An electric locking and unlocking apparatus comprising an electrically controlled lock mechanism, a device for simultaneously reading from a magnetic card a key-code signal consisting of a plurality of bits and a clock signal consisting of the same number of bits and synchronized with said key-code signal, said reading device presenting the respective signals to separate output terminals, a storage device comprising a plurality of storage circuits corresponding in number to a plurality of kinds of keys to be used and respectively storing a predetermined key-comparison signal corresponding to each of said keys and having the same number of bits as the key-code and clock signals, said storage device presenting said key-comparison signal to an output in accordance with said clock signal from said reading device, a logic operational device including a plurality of comparator circuits corresponding in number to said kinds of keys and respectively connected to each of said storage circuits, said logic operational device comparing the respective bits of the key-comparison signals, stored respectively in each of the storage circuits and supplied to each of said comparator circuits upon receiving each bit of the clock signal from the reading device, with the respective bits of the key-code signal from the reading device and producing a coincidence signal at an output when the key-code signal coincides with the key-comparison signal in any one of the storage circuits, and a control device for controlling said lock mechanism in response to said coincidence signal.

3,845,362
ELECTRONIC LOCK

Bruce C. Roe, P.O. Box 253, Aurora, Ill. 60540

Filed Aug. 20, 1973, Ser. No. 390,162

Int. Cl. E05b *49/00*

U.S. Cl. 317—134 **7 Claims**

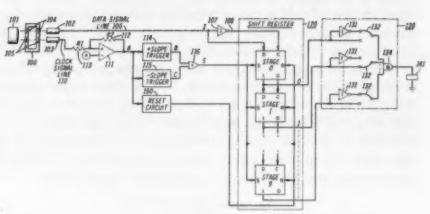
1. An electronic locking arrangement comprising:

a source of light energy;

a first and a second sensor responsive to intermittent exposure to light energy from said source to generate a plurality of multi-state signals;

a coded key having a first and a second set of aligned apertures;

a key guide for guiding said key in a path between said source and said sensors wherein said first set of apertures are aligned along a line intersecting a line extending from said source to said first sensor and said second set of apertures are aligned along a line intersecting a line extending from said source to said second sensor, whereby said sensors are intermittently exposed to light energy from said source when said key is slidingly inserted into said guide;



said apertures of said first set each having a substantially rectangular shape and having a forward edge and a rearward edge, the center of each of said apertures of said second set being approximately aligned with one of said forward or one of said rearward edges;

a multi-state shift register;

means for connecting said sensors to said shift register, said shift register being responsive to signals from said first sensor to store the states of signals generated by said second sensor in said shift register; and

means connected to said shift register for selectively operating a locking solenoid.

3,845,363
MONITOR CIRCUIT

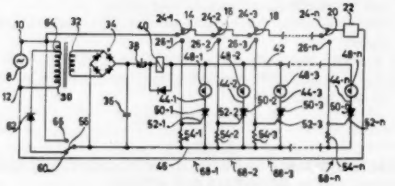
Leo Josef Maria Billion, 19, Rijkestraat, 3009 Winksele, Belgium

Filed May 7, 1973, Ser. No. 357,921

Claims priority, application Belgium, May 10, 1972, 117311

Int. Cl. H01h *47/00, 47/32*

U.S. Cl. 317—136 **3 Claims**



1. A monitoring system comprising, a plurality of signalizing circuits, each having an electronic switch, of the thyristor type having a control electrode and being connected in series with a signalling device to be activated by current flowing through it, all signalizing circuits being connected in parallel between two common lines the first of which is connected to the first terminal of a direct current source through a relay and a normally closed switch and the second one of which is connected to the second terminal of this current source and also

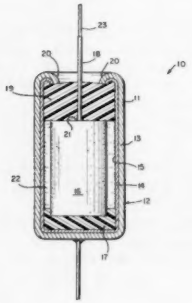
to the input terminal of a two-position relay switch having a first and a second output terminal controlled by said relay, a source of control voltage being connected for switching any one of the thyristors from the non-conducting into the conducting state in response to the application of this voltage to the relative control electrode with a first and a second terminal, the first terminal being connected to the inputs of alarm switching elements each one of which, in response to the occurrance of an abnormal condition, brings this control voltage on its output which is connected to the control electrodes of its respective thyristors, the first output of the two position relay switch which is in the non-energized state of the relay connected to the input of the switch being connected to the second terminal of the control voltage source, the second output of the two position switch being connected to the first terminal of said control voltage source.

3,845,364

CATHODE ELECTRODE FOR OPERATION UNDER CONDITIONS OF REVERSE POLARITY VOLTAGE

Lyle E. Shoot, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Oct. 15, 1973, Ser. No. 406,312
Int. Cl. H01g 9/04; H01g 9/08
U.S. Cl. 317—230 **8 Claims**



1. In combination, an anode electrode and a cathode electrode including a surface adapted to be contacted by a liquid or semi-liquid electrolyte, the cathode electrode surface comprising an alloy of about 40 to about 90 wt.% Au, the remainder essentially Ag, and electrically conductive finely divided material over the cathode electrode surface to increase the effective area of the surface, the finely divided material selected from the group consisting of metals, metal alloys, carbon containing materials and mixtures thereof.

3,845,365

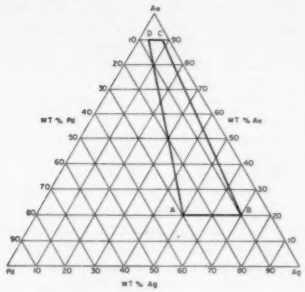
GLASS CERAMIC CAPACITORS WITH TENARY ALLOY ELECTRODES AND METHOD OF MAKING THE SAME

William Thomas Hicks, Lewiston, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 6, 1973, Ser. No. 394,822
Int. Cl. H01c 1/01
U.S. Cl. 317—258 **18 Claims**

1. In a method of making a multilayer capacitor comprising the steps of:

1. forming a plurality of thin dielectric sheets in the green state comprising a crystallizable glass powder in an organic binder,
2. applying a metal film of finely divided noble metal powder dispersed in an inert vehicle to at least two of said green dielectric sheets in a predetermined pattern,
3. disposing said green dielectric sheets, with said metal film applied thereto, in a stack such that each of said metal films is separated from adjacent metal films by one of said green dielectric sheets and such that the first two metal films of the stack partly overlap each other, alternate films being substantially in registration with each other, said films comprising capacitor electrodes,
4. disposing a green dielectric film over the stack so formed as a cover therefor,
5. subjecting the stack so formed to elevated temperature and pressure to volatilize any organic constituents therein, to compact and coalesce said glass, and to seal adjacent sheets together, thereby forming a substantially monolithic unit, and



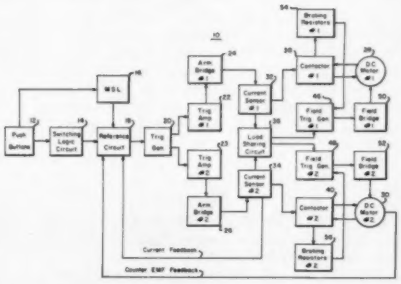
6. heat treating said unit so as to partially crystallize the glass to form a glass ceramic and to sinter the noble metal films, the improvement of applying in step (2) a metal film of noble metal powder dispersed in an inert vehicle wherein said powder consists essentially of, by weight, 20–90 percent gold powder, 2–30 percent palladium powder and 3–70 percent silver powder, said noble metal powder being further characterized in that the proportions of noble metals lie within the four-sided figure identified in that its area lies within the straight lines connecting points A, B, C and D in the ternary phase diagram of the figure in the drawing.

3,845,366

INTEGRATED DRIVE SYSTEM

James Monroe Metzler, York, and James Blockinger Forman, Red Lion, both of Pa., assignors to Fincor, Inc., York, Pa.

Continuation of Ser. No. 165,110, July 22, 1971, abandoned. This application Apr. 12, 1973, Ser. No. 350,448
Int. Cl. H02p 1/54
U.S. Cl. 318—99 **1 Claim**



1. An electronic control system adapted to control at least two mechanically coupled DC motors whose input is connected to an AC source and whose output is comprising control means connected for electrically controlling a semiconductive switching logic means and a motor speed logic means,

a reference circuit means connected to said switching logic means and said motor speed logic means, said reference circuit means connected to a variable DC voltage generating means adapted to apply a variable DC voltage to said motors, said variable DC voltage generator means is further provided armature bridge means connected between said amplifier means and said DC motors, there being an armature bridge means for each of said motors, said armature bridge being adapted to provide a variable DC output voltage to said armatures, there being one trigger generator whose output is connected to each of said amplifier means whereby substantially equal armature voltages are maintained in said armatures in each of said motors, said variable DC voltage generating means being also provided with current sensing means connected between said armature bridge means and said armatures adapted to generate a signal representative of the current flowing to each of said armatures, and a load sharing means connected between said current sensing means adapted to maintain prescribed loading between each of said DC motors, said load sharing means is provided with load sharing circuit means which is connected between said current sensing means and a field trigger generator, said field trigger generator being connected to the output of a field bridge, the output of said field bridge being connected to the field windings of said DC motors, said reference circuit means adapted to combine a signal directly representative of the counter EMF in the armatures in said motors, a reference voltage signal as generated by said motor speed logic means, and a signal representative of the current in said armatures, to generate an error signal representative of said motor's actual speed and output torque with respect to a reference speed and output torque, said variable DC voltage generating means further includes a trigger generator whose input is connected to said reference circuit means and said output is connected to said armatures of said DC motors, said trigger generator being adapted to generate a variable width pulse synchronized with the frequency of said AC source, said variable DC voltage generator means is further provided with amplifier means connected between said trigger generator and said motors and adapted to amplify said variable width pulses, said signals generated by said current sensing means are inputted to said load sharing circuit means, said load sharing means being adapted to compare any differences between said signals and generate a signal representative of any such differences the generated signal inputted to said field trigger generator to in turn vary the DC output voltage of said field bridge to maintain a predetermined load sharing level between each of said DC motors, there being one field trigger generator and one field bridge for each DC motor in said system, there being only one load sharing circuit means it being connected to each of said field trigger generators, said variable DC voltage generating means includes a constant torque braking means switchably connected across said armature, said constant torque braking means includes braking resistors adapted to be switchably connected by a contacting means, across said armature to dissipate, at a constant rate, the current flowing in said armature by the generator action of said motors during the braking cycle, said braking resistors generate a signal during the braking cycle representative of the voltage in said armature, said signal being inputted to said field trigger generators to maintain voltage generated during the braking cycle substantially constant.

3,845,367

INTEGRATED CIRCUIT FOR ELECTRONIC CLOCKS

Hans Keller, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,269

Claims priority, application Germany, May 6, 1972, 2222298

Int. Cl. H02p *5/16*

U.S. Cl. 318—127 **5 Claims**

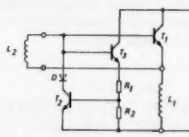
1. An integrated solid-state transistorized switching amplifier for use in electronically-controlled watch circuits of the type wherein a mechanically oscillating system induces switching pulses in a control winding, comprising:

a d.c. voltage source having a voltage conducting pole and a zero pole;

an amplifying transistor having a base, emitter, and collector, said collector coupled to said voltage conducting pole, said control winding coupled between said base and emitter of said amplifying transistor;

an operating winding coupled between the emitter of said amplifying transistor and said zero pole;

an ohmic voltage divider comprising first and second resistors arranged in parallel to said operating winding having



first and second terminals and a center junction, said first terminal coupled to said zero point;

a stabilizing transistor having an emitter coupled to said zero pole, a base coupled to said center junction, and a collector;

a diode; and

a further transistor having an emitter coupled to said second terminal, a collector coupled to said voltage conducting pole and a base coupled to the base of said amplifying transistor and via said diode, to the collector of said stabilizing transistor.

3,845,368

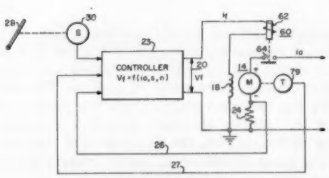
ELECTRIC VEHICLE HAVING PROGRAMMED FIELD CONTROL OF SEPARATELY EXCITED DC DRIVE MOTORS

Richard A. Elco, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1973, Ser. No. 346,552

Int. Cl. H02p *5/06*

U.S. Cl. 318—139 **15 Claims**



1. An electric vehicle comprising:

a throttle means positionable between an off position and an open position;

a direct current drive motor for moving the electric vehicle having, a separately excited field for controlling operation of said direct current drive motor and, an armature winding;

a field controller means for supplying an excitation voltage to the separately excited field of said direct current drive motor which is a function of the setting of said throttle and the current flowing through the armature winding of said direct current drive motor;

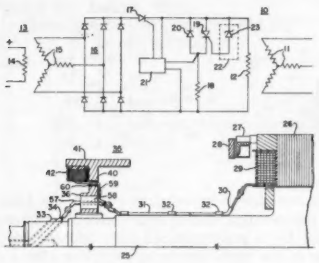
safety means for limiting the speed of said direct current drive motor; and,

said safety means comprises a minimum voltage supply provided to the separately excited field of said direct current drive motor.

3,845,369
STARTING CONTROL FOR BRUSHLESS SYNCHRONOUS MOTORS

Carl J. Heyne, III, Allison Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1973, Ser. No. 359,053
Int. Cl. H02p 1/46
U.S. Cl. 318—174 **10 Claims**

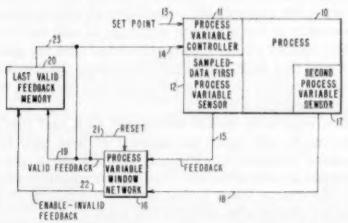


1. A synchronous motor having a rotor member including a field member, a field winding on said field member, a source of direct current excitation for said field winding, a control wheel on the rotor member, an annular, multi-turn wire coil disposed on said control wheel substantially coaxial therewith, and solid-state control means carried on the control wheel and adapted to connect said coil across the field winding during starting of the motor and to disconnect the coil and apply said direct current excitation to the field winding for synchronous operation of the motor; said control means including solid-state switch devices and static circuit components interconnected in a control circuit, said control wheel being made of electrically conductive material of good thermal conductivity, and at least one of said solid-state switch devices being mounted directly on the wheel in good electrical and thermal contact therewith.

3,845,370
CREDIBILITY TESTING IN SAMPLED-DATA SYSTEMS

John P. Mantey, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1973, Ser. No. 387,267
Int. Cl. H02p 5/16
U.S. Cl. 318—327 **4 Claims**



1. A closed-loop speed control servomechanism operable to variably energize a motor in a start-run-stop sequence to achieve a desired acceleration, constant speed run and deceleration profile, comprising:

digital tachometer means driven by said motor and operable to provide sampled-data period feedback data in accordance with actual motor speed, said feedback data being aperiodic during acceleration and deceleration, and being substantially periodic during constant speed run,

speed memory means containing desired period data and permissible period window data which define the motor's desired acceleration, constant speed run and deceleration profiles,

means providing motor start and stop commands,

means including clock means connecting said motor start and stop commands in controlling relation to said memory means to periodically interrogate said memory means,

period testing network means receiving as inputs said period feedback, said desired period data and permissible period window data, and operating thereon to test said feedback data against a permissible period window data to determine if said feedback data is valid or invalid,

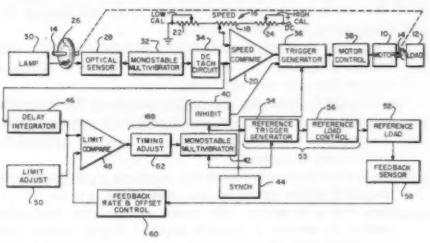
hold network means controlled by said testing network means when said feedback data is valid and operable to hold said valid feedback data, and

means including said hold network means operable to selectively supply current valid feedback data or to substitute therefor feedback data which is a function of prior valid feedback data for use by said servomechanism, in accordance with said current feedback data passing or failing said test, respectively.

3,845,371
MOTOR CONTROLLER WITH POWER LIMITING

Peter S. Grinnell, Jr., Framingham, Mass., assignor to International Equipment Company, Needham Heights, Mass.

Filed Apr. 6, 1973, Ser. No. 348,680
Int. Cl. H02p 5/16
U.S. Cl. 318—391 **18 Claims**



1. In proportional speed controlling, electric motor-driving apparatus which produces a speed control signal and responds thereto normally to apply electrical power to a motor for a portion of each of a succession of periodic times, the improvement comprising

A. means for producing a first signal responsive to the speed of the motor,

B. means for producing a reference signal proportional to a selected maximum electrical voltage available for application to such motor at the instantaneous speed of the motor,

C. reference feedback means connected to said reference producing means for producing a second signal responsive to said reference signal,

D. compare means for producing a third signal responsive to a comparison of said first signal with said second signal, and

E. gating means for producing an inhibit signal having in each of said periodic times an inhibit interval responsive in duration to said third signal, and for disabling said response to said speed control signal for said inhibit interval in each said periodic time.

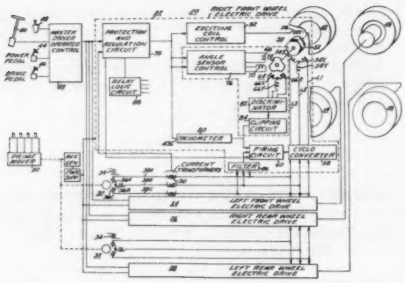
3,845,372
CIRCUIT FOR STARTING ELECTRIC MOTOR FROM STANDSTILL WITH MAXIMUM TORQUE

William L. Ringland, Greendale; Manfred E. Neumann, New Berlin; Ernst K. Kaeser, West Allis; Thomas P. Gilmore, Wauwatosa, and Allois F. Geiersbach, Milwaukee, all of Wis., assignors to Allis Chalmers Manufacturing Company, Milwaukee, Wis.

Division of Ser. No. 91,115, Nov. 19, 1970, , which is a division of Ser. No. 853,462, Aug. 27, 1969, , which is a continuation-in-part of Ser. No. 824,223, May 13, 1969, Pat. No. 3,584,276. This application Jan. 26, 1973, Ser. No. 326,612

Int. Cl. H02p *1/04*

U.S. Cl. 318—398 **15 Claims**



1. A circuit for starting an electric motor from standstill with maximum torque and limiting motor current during starting comprising, in combination,

means for deriving a selectively variabale power signal whose magnitude is a function of the desired output torque for said motor,

variable limit clamping means for clamping the magnitude of said power signal to an upper limit which varies in accordance with the magnitude of a signal applied to a control input thereof,

tachometer means for deriving a speed signal which is a function of the speed of said motor,

means for subtracting said speed signal from said power signal to derive a current control signal which varies inversely with the speed of said motor, said current control signal being applied ot said control input,

means for deriving a current feedback signal which is a function of the current supplied to said motor, and

means for comparing said current feedback signal to said power signal, the output from said comparing means being an input to said variable limit clamping means.

3,845,373
MOTOR-DRIVEN SCREW DRIVER WITH AUTOMATIC STOPPING MEANS

Katsuyuki Totsu, 4-7, 3 Chome Oshiage, Sumido-ku, and Toshimasa Shimizu, 21-14, 3 Chome Nakajujo Kita-ku, both of Tokyo, Japan

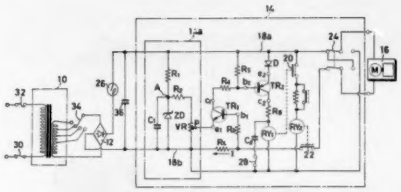
Filed May 21, 1973, Ser. No. 362,242

Claims priority, application Japan, May 22, 1972, 47-50509; Mar. 20, 1973, 48-32471

Int. Cl. H02h *7/085*

U.S. Cl. 318—434 **5 Claims**

1. A screw driver apparatus comprising a motor driven screw driver, a selectively variable source of energy for energizing the motor driven screw driver with a prdetermined driving torque, a manually positionable electrical switch having at least two positions in one of which the motor driven screw driver is connected for energization by said source of energy through solely resistive loading means which produces a voltage drop the magnitude of which is related to the magnitude of the motor current flowing through the resistive loading means, and electircal circuit means including said resistive loading means and being operative in said one position of said electrical switch for (a) automatically terminating operation



of the motor driven screw driver when the load current through said resistive loading means exceeds a predetermined magnitude for a predetermined time and (b) for resetting operation of the motor driven screw driver after a predetermined time subsequent to said termination of operation, said electrical switch in said other position thereof by-passing said circuit means and said loading means and being directly connected to said source of energy.

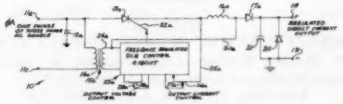
3,845,374
CIRCUITRY FOR CONVERTING AC POWER TO REGULATED DC POWER

Leroy E. Clarady; J. Jay McSweeney, and Joe H. Smith, all of Houston, Tex., assignors to B & C Industries, Inc., Houston, Tex.

Filed Aug. 18, 1972, Ser. No. 281,978

Int. Cl. H02p *1/00*

U.S. Cl. 318—445 **17 Claims**



1. A circuit for supplying controlled power to a direct current motor having armature and field windings comprising:

a. armature supply circuit means having first SCR switching means for controllably connecting electrical energy from a source to the armature windings of said motor;

b. first control circuit means connected with the gate means of said first SCR means for controlling the percentage of source energy conducted through said first SCR means to said armature windings;

c. first regulating means connected with said first control means for changing the amount of time said first SCR means conduct as required to maintain a preselected output at said armature windings irrespective of changes in the energy taken by the armature windings or changes in the energy appearing in the source;

d. field circuit means having second SCR switching means for controllably connecting electrical energy from a source to the field windings of said motor;

e. second control circuit means connected with the gate of said second SCR means for controlling the percentage of source energy conducted through said second SCR means to said field windings; and

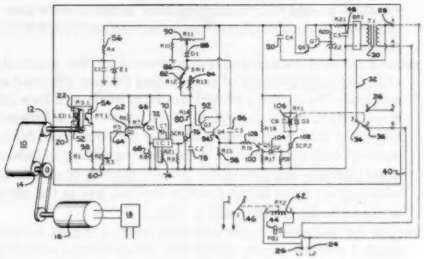
f. second regulating means connected with said second control means for changing the amount of time said sec-

ond SCR means conducts as required to maintain a preselected output at said field windings irrespective of changes in the energy taken by the field windings or in the energy appearing in the source energy supplied to said field circuit means.

3,845,375
ELECTRONIC ROTATIONAL SENSOR

Ariel I. Stiebel, Bloomfield Hills, Mich., assignor to McLaughlin, Ward & Co., Jackson, Mich.

Filed Nov. 9, 1973, Ser. No. 414,503
Int. Cl. H02h *7/85*
U.S. Cl. 318—463 **8 Claims**



1. A rotation sensing electric motor control for motor driven apparatus comprising, in combination, signal producing means producing a pulsating current flow having a frequency output proportional to the rate of rotation of the apparatus driven by the electric motor to be controlled and a variable pulse width, pulse durationequalizing means connected to said frequency output equalizing the duration of the pulse widths of said frequency output, voltage charging means connected to a constant supply voltage and charging at a predetermined rate producing a ramp voltage, discharge means connected to said voltage charging means controlling the discharge thereof and controlled by and connected to the output of said pulse duration equalizing means, ramp voltage sensing means connected to and controlled by said ramp voltage producing a control signal upon said ramp voltage attaining a predetermined value, and motor switch means connected to said ramp voltage sensing means operated by said control signal whereby said motor switch means is actuated to a motor deenergizing position upon the frequency of said pulsating current falling below the predetermined rate necessary to operate said discharge means and prevent said ramp voltage from attaining a value sufficient to produce said control signal and operate said switch means.

3,845,376
PROCESS CONTROL SYSTEM

Gordon R. Brushwyler, Yorba Linda, and Richard J. Kotalik, Santa Ana, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 21, 1973, Ser. No. 399,536
Int. Cl. G05b *7/00*
U.S. Cl. 318—591 **12 Claims**

1. Apparatus for controlling a process according to means responsive to the operational state of the process producing a process variable output signal indicative thereof, comprising:

a source for producing a common zero reference signal;

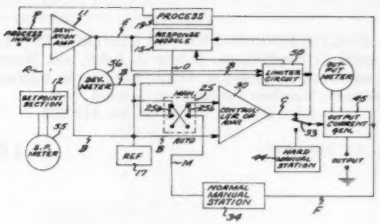
an operational integrator connected to receive at the input thereof said reference signal, including a first capacitive feedback and a second capacitive feedback, for producing an output signal corresponding to an integral of the signals received at the input thereof;

combining means adapted to receive the process variable signal and a control input signal for producing an output signal indicative of a linear combination thereof connected to said first capacitive feedback;

first input generating means connected to said second capacitive feedback for producing a signal of preselected amplitude and polarity;

first switching means disposed to alternatively connect said first or second capacitive feedback to the input of said operational integrator and connecting respectively the other alternative ones thereof to said reference signal;

second input generating means for producing a manually variable output signal electrically independent of said operational integrator;



second switching means interposed across the output of said operational integrator to alternatively connect to pass said second input generating means or said operational integrator means output signals;

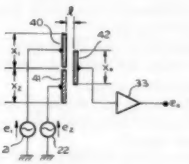
isolation means connected to receive said second switching means output signal for producing an output signal; and

limiting means operatively connected across said first capacitive feedback for terminating the integral input to said operational integrator upon sensing a signal from said first capacitive feedback above a predetermined amplitude.

3,845,377
ROTATIONAL ANGLE TRANSDUCER

Akira Shimotori, Tokyo, Japan, assignor to Nihon Regulator Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1973, Ser. No. 350,983
Claims priority, application Japan, Apr. 20, 1972, 47-39951
Int. Cl. G05b *1/06;* **G01r** *27/26;* **G01n** *27/00*
U.S. Cl. 318—662 **15 Claims**



1. A contactless rotational angle transducer for generating an output signal indicative of the angular position of a rotatable member, comprising:

a stator plate divided into a plurality of electrically insulated sector members;

means for impressing exciting voltages having a triangular waveform on adjacent ones of said sector members, the phase of each impressed voltage differing by $2\pi/n$ from that impressed on adjacent members where n equals the number of sector members;

a confronting plate disposed in parallel spaced-apart and aligned relationship to said stator plate so as to develop

an induced voltage in response to said impressed exciting voltages on said sector members;

a sector rotor plate rotatably coupled to said rotatable member and disposed in parallel relationship between said stator plate and said confronting plate for modifying the voltage induced on said confronting plate; and

signal generating means responsive to the phase difference between the signal induced in said confronting plate and the voltage impressed on a selected one of said sector members for generating a pulse-modulated output signal indicative of the angular position of said rotatable member.

3,845,378

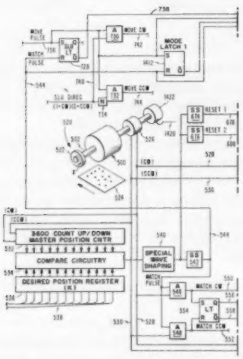
ANALOG STEPPING MOTOR CONTROL SYSTEM

Kenneth E. Hendrickson; Steven D. Keidl, and Warren A. Lopour, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 319,088

Int. Cl. G05b *1/00*

U.S. Cl. 318—685 **6 Claims**



1. In combination,

an electric motor of the stepping type having a stator with a set of discrete poles and a rotor having a set of discrete poles with electrical windings on one of said sets of poles so that said rotor has a plurality of natural detent positions in which said rotor poles are aligned with poles of said stator or are between poles of said stator in a symmetrical relationship therewith when various of said windings are energized,

means for energizing said windings to apply torque on said rotor in a foreward direction when supplied with a forward energization signal,

means for energizing said windings to apply torque on said rotor in a reverse direction when supplied with a reverse energization signal,

a first emitter driven by said rotor effective to produce output pulses as said rotor moves through successive increments each of Z° after passing through its desired or home position in the forward direction and producing the same output pulses at the same rotor positions as the rotor moves back in the reverse direction,

a second emitter driven by said rotor effective to produce a gradually changing output signal as the rotor rotates having nodes which are substantially farther apart than Z° with rotor rotation,

a first control means under the control of the output pulses of said first emitter for providing said reverse energization signal so as to thereby apply torque on said rotor in the reverse direction with constant average currents in said windings when said rotor passes through its home position moving in the forward direction until the point of maximum oscillation of the rotor and the control means including counting means under the control of the output pulses of said first emitter so as to maintain the reverse energization signal and the corresponding constant average currents in said windings producing reverse rotor torque until the rotor returns to a reverse torque termination point which is between said point of maximum oscillation and said home position,

said first control means including means effective under the action of said counting means at a forward torque initiating point of rotor rotation lying between said point of maximum oscillation of the rotor and said home position for providing said forward energization signal and thereby applying torque on said rotor in the forward direction with corresponding constant average currents in said windings as said rotor is moving back in the reverse direction from said point of maximum oscillation toward home position.

second control means under the control of the gradually changing output signal of said second emitter effective to modulate the currents in said windings while said forward energization signal is applied so as to provide a forward torque on said rotor tending to move the rotor to its home position with said currents in the windings being so modulated that they are greater for greater spacing of said rotor with respect to its home position and are less as the rotor is closer to its home position, and

means for switching from said first control means to said second control means under the action of said counting means when said rotor is closer to its said home position than said forward torque initiating point of rotor rotation.

3,845,379

CHOPPER CIRCUIT FOR D.C. MOTOR

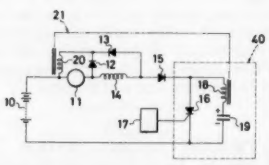
Masaru Kawamata, Kounan, and Mineo Ozeki, Ichinomiya, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Sept. 28, 1973, Ser. No. 401,571

Claims priority, application Japan, Jan. 22, 1973, 48-10219

Int. Cl. H02m *3/14*

U.S. Cl. 321—45 C **8 Claims**



1. A chopper circuit for controlling a direct-current motor having a free-wheeling diode serially connected at one end to a direct-current power source and at the other end to said chopper circuit, which chopper circuit comprises switching means serially connected at one end to said motor and at the other end to said power source, said switching means becoming conducting when subjected to a positive potential higher than a predetermined level and non-conducting when subjected to a negative potential, a combination of an inductive reactor and a capacitor serially connected to each other and shunting said switching means, and a coil electrically connected in series with said free-wheeling diode and magnetically connected to said reactor.

3,845,380
CURRENT STABILIZER HAVING A SATURABLE REACTOR IN THE MODE OF FORCED MAGNETIZATION

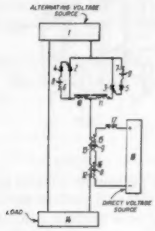
Vladimir Romanovich Lepp, ulitsa Govorova 3, kv. 83; Kharis Malikovich Sibgatulin, Beskudnikovsky bulvar 32, korpus 4, kv. 56, and Jury Nikolaevich Cherkasov, proezd Cherskogo 9, kv. 35, all of Moscow, U.S.S.R.

Filed Apr. 11, 1973, Ser. No. 350,138

Claims priority, application U.S.S.R., May 22, 1972, 1786614

Int. Cl. H02m *5/28, 7/20*

U.S. Cl. 323—7 **4 Claims**



1. A current stabilizer having saturable reactor in the mode of forced magnetization, said current stabilizer comprising in combination:

an AC voltage source;

a DC voltage source;

a load;

a saturable reactor being formed by cores having voltage working windings, current working windings, and control windings disposed thereon, said control windings being connected in series to each other and separated by said voltage working windings and said current working windings, said saturable reactor being connected in series between said AC voltage source and said load;

a tap-changer being formed by controlled rectifiers, said rectifier having an anode, a cathode and a control-electrode, said AC voltage source being connected in series between said tap-changer and said load;

diodes being connected in series in said voltage working windings of said saturable reactor, said diodes and said voltage working windings being connected between said anode and said control electrode of said rectifier;

a first line choking coil having a winding connected in series between said rectifiers of said tap-changer and said current working windings, said current working windings being connected in series to said load; and

a second line choking coil being connected in series to said control windings, said second line choking coil and said control windings being connected in parallel to said DC voltage source.

3,845,381
HIGH-RESOLUTION MAGNETIC ANOMALY DETECTOR FOR WELL BORE PIPING

Herbert J. Hart, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,551

Int. Cl. G01r *33/12*

U.S. Cl. 324—34 R **13 Claims**

1. Apparatus adapted for detecting magnetic anomalies in a string of well bore pipe and comprising:

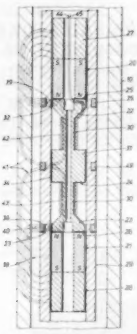
an elongated support member adapted for movement through a string of such well bore pipe;

magnet means cooperatively arranged on said support member with the north and south magnet poles of said magnet means being situated at longitudinally spaced intervals along said support member for producing a magnetic flux field;

first pole-piece means cooperatively arranged on said support member immediately adjacent to one of said magnetic poles;

second pole-piece means cooperatively arranged on said support member immediately adjacent to the other of said magnetic poles for defining a first shorter flux path extending between said magnetic poles;

third pole-piece means cooperatively arranged on said support member magnetically coupled to said second pole-piece means and longitudinally separated from said second pole-piece means for defining a second longer flux path extending between said magnetic poles;



magnetic flux-focusing means cooperatively arranged on said support and disposed exterior of and adjacent to said second pole-piece means for selectively reducing the overall magnetic reluctance of said first flux path below the overall magnetic reluctance of said second flux path only so long as said first flux path is not traversing a magnetic anomaly on an adjacent wall section of a well bore pipe through which said apparatus is being moved; and

detecting coil means on said support member and cooperatively arranged between said second and third pole-piece means for detecting changes in the flux intensities in said first and second flux paths.

3,845,382
METHOD OF MAGNETOGRAPHIC INSPECTION OF METAL PARTS USING A ROLL OF MAGNETIC TAPE HAVING AN ADHESIVE COATING

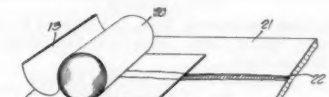
Friedrich Martin Forster, Grathwohlstrasse, 4, D7410 Reutlingen, Germany

Filed May 29, 1973, Ser. No. 364,711

Claims priority, application Germany, Nov. 2, 1972, 2253688

Int. Cl. G01r *33/12*

U.S. Cl. 324—37 **5 Claims**



1. In a method of magnetographic inspection for defects in ferromagnetic components including magnetizing the zone of

a component to be tested and bringing said zone into contact with a flexible magnetic storage tape, whereby the magnetic leakage flux emanating from the surface of the zone to be tested at defect points is stored in the magnetic storage tape, said tape having an adhesive material on one surface covered by a strippable element, the improvement comprising:

applying the magnetic storage tape to the surface of the zone to be tested while simultaneously removing the strippable element such that the adhesive material contacts said surface;

pressing the magnetic storage tape into adherent contact with the surface of the zone to be tested;

magnetizing the component zone; and

separating the magnetic storage tape from the zone surface.

3,845,383

METHOD AND APPARATUS FOR INSPECTION OF FERRO-MAGNETIC BILLETS

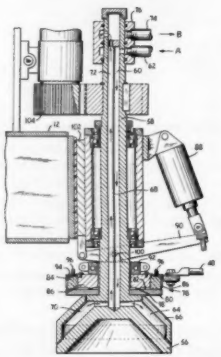
Harold Chr. Bjerke, Osteras, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Filed Oct. 4, 1973, Ser. No. 403,602

Claims priority, application Norway, Oct. 10, 1972, 3620/72

Int. Cl. G01r *33/12*

U.S. Cl. 324—38 **5 Claims**



1. A process for the inspection of elongated ferro-magnetic objects comprising:

a. magnetizing the elongated ferro-magnetic object by passing a current through it;

b. applying to the magnetized ferro-magnetic object a powder comprising finely divided iron or iron alloys and a coloring agent in powder form which, upon heating, will adhere to the surface of the ferro-magnetic object; and

c. thereafter heating the surface of the ferro-magnetic object with an alternating current of sufficient intensity to cause the coloring agent to adhere to the ferro-magnetic object.

3,845,384

STUD FINDER

Carl Christian Stoutenberg, Avon, and Richard H. Rathbun, Montville, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Feb. 9, 1973, Ser. No. 331,054

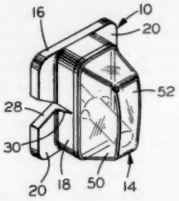
Int. Cl. G01r *33/00*

U.S. Cl. 324—41 **10 Claims**

1. A stud finder comprising:

a. a unitary base member including a planar base portion, a sidewall portion upstanding from said planar base portion, and support means formed on the interior of said sidewall portion, said base portion having portions extending laterally outwardly from the base thereof and of the margins of said sidewall portion said laterally outwardly extending portions providing side guide portions with aligning means thereon facilitating marking of the workpiece,

b. a magnet subassembly comprising an elongated magnet and a sleeve receiving therein at least a portion of said magnet and having mounting portions pivotally mounting said magnet subassembly in said support means with the longitudinal axis of said magnet subassembly extending



toward said base portion for pivotal movement relative to said upstanding sidewall portion about an axis parallel to the plane of said base portion, said aligning means being aligned with said pivotal axis of said magnet subassembly; and

c. a transparent unitary canopy member mounted on said upstanding sidewall portion and defining therewith a chamber in which said magnet subassembly is pivotable, said transparent canopy member permitting viewing of the orientation of said magnet subassembly.

3,845,385

CIRCUIT ARRANGEMENT FOR CONVERTING A BRIDGE UNBALANCE INTO A FREQUENCY VARIATION

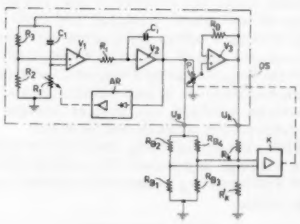
Dietrich Meyer Ebrecht, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1973, Ser. No. 341,985

Claims priority, application Germany, Mar. 23, 1972, 2214114

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 R **12 Claims**



1. A circuit for converting a resistance variation into a proportional variation of the oscillation frequency of an oscillator comprising, a resistance bridge having input terminals supplied by the oscillation signal of the oscillator, said oscillator including a frequency determining network that includes a variable gain device, a compensation amplifier with its input connected to the bridge output terminals and its output connected to control the variable gain device, a resistor coupling the variable gain device to an output terminal of said bridge to supply a compensation signal for any bridge unbalance so that the ratio of the compensation signal to the oscillation

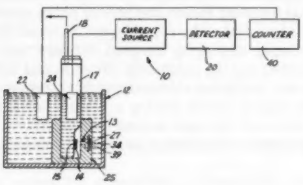
signal is in a linear relationship to the bridge unbalance, said oscillator further comprising, a variable resistor and a reactance element in series circuit, an amplifier with its input coupled to the reactance element and its output connected to the input of an integrator, means connecting the integrator output to the input of the variable gain device and the output of the variable gain device to said series circuit, and means responsive to the integrator output signal for varying said variable resistor in a manner to maintain the amplitude of the integrator signal constant.

3,845,386

METHOD OF AND AN APPARATUS FOR COUNTING FIBERS

Reg Davies, Bollingbrook, and Richard F. Karuhn, Downers Grove, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,705
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **16 Claims**



1. A method for electrically sensing and sizing small elongated fiber particles suspended in an electrolyte to form a suspension within a vessel comprising the steps of: passing the particles and electrolyte through a screen means having openings of a predetermined size therein, passing the particles having been screened through an electrical zoning sensing aperture along with the electrolyte, electrically sensing the particles passing through said aperture and generating electrical signals having a characteristic indicative of the volume of the particle passing through said aperture, classifying the signals according to the volume characteristics thereof, counting the classified signals having volume characteristics equal to or less than the predetermined volume associated with the maximum size of spherical particles capable of passing through said screen openings,

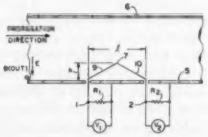
and separately counting as fibers those classified signals having volume characteristics greater than said volume characteristics for said maximum size of spherical particles capable of passing through said screen means.

3,845,387

NON-REACTIVE ELECTROMAGNETIC SENSOR

Leonard C. Humphrey, Baldwinsville, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 27, 1973, Ser. No. 392,161
Int. Cl. G01r *21/02, 27/06*
U.S. Cl. 324—95 **4 Claims**



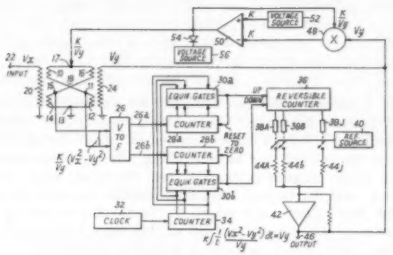
1. In a system for measuring field strengths of incident and reflected waveforms from a signal being propagated through a transmission line which contains at least one plate; the improvement comprising a sensor having length and width dimensions; first and second supporting means connected to opposite sides of the length dimension of said sensor so as to support said sensor in spaced relationship above one plate of the transmission line; said first and second supporting means supporting said sensor such that its length dimension is in parallel with the propaation direction of the signal; said sensor having a configuration of a rhombic plate bent at its smaller diagonal so as to provide a constant characteristic impedance for its entire length above said one plate of the transmission line; first and second terminal means located on the opposite side of said one plate from said sensor; and said first and second supporting means also serving to connect the ends of said sensor through said one plate of the transmission line to said first and second terminals.

3,845,388

RMS CONVERTER

Anthony John Ley, Farnham, and Howard Anthony Dorey, Godalming, both of England, assignors to The Solartron Electronic Group Limited, Farnborough, Hampshire, England

Filed July 30, 1973, Ser. No. 383,848
Claims priority, application Great Britain, Aug. 19, 1972, 38789/72
Int. Cl. G01r *5/22, 15/10*
U.S. Cl. 324—106 **7 Claims**



1. A device for measuring the RMS value of an input signal comprising

a bridge circuit having

supply terminals at two corners thereof,

output terminals at the opposite corners thereof and

a resistive temperature sensor in each of two arms adjacent one of said supply terminals, said sensor having a resistance which varies substantially linearly with temperature;

first heating element means in thermal contact with one of said sensors for receiving the input signal to be measured and for heating said one of said sensors;

second heating element means having characteristics substantially identical to said first heating means, said second means being in thermal contact with the other one of said sensors for receiving a feedback signal and for heating said other one of said sensors;

integrating circuit means connected to said output terminals of said bridge for accepting the electrical output signal produced by unbalance of said bridge and for producing an electrical signal representative of the time integral of said output signal divided by time;

circuit means for feeding the output of said integrating circuit means back to said second heating element means;

a source of voltage; and

supply circuit means connected to said source of voltage, to the output of said integrating circuit means and to the supply terminals of said bridge for providing to said

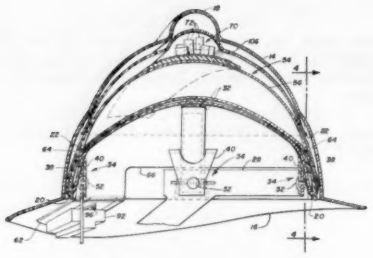
bridge a supply voltage which is inversely proportional to the output voltage of said integrating means, whereby the output voltage of said integrating circuit means has a magnitude representative of the RMS value of the input signal.

3,845,389

HELMET TRANSCEIVER ASSEMBLY FOR A FIREMEN'S HELMET ASSEMBLY OR THE LIKE

Dennis G. Phillips, Lititz, and James N. Brady, Holtwood, both of Pa., assignors to International Signal & Control Corp., Lancaster, Pa.

Filed Sept. 26, 1973, Ser. No. 400,729
Int. Cl. H04b *1/38*
U.S. Cl. 325—16 **18 Claims**



1. A helmet transceiver assembly for use with a firemen's helmet assembly or the like having a high impact resistant helmet and a helmet suspension system removably mounted within the helmet, said helmet having a crown portion and a brim which extends outwardly from the lower edge of the crown, and the helmet suspension system including a head band, head straps, and means for removably mounting the head band and head straps on spaced apart portions of the helmet; said helmet transceiver assembly comprising:

a transceiver support including a crown portion adapted to be disposed within the crown of said helmet and downwardly and outwardly extending means adapted to be disposed under the brim of said helmet, and means on the transceiver support cooperable with the mounting means of the helmet suspension system to removably hold the crown portion of the transceiver support generally between the helmet and the helmet suspension system; and

a self-contained radio transceiver mounted upon the transceiver support, said self-contained radio transceiver including a radio receiver, radio transmitter, audio components, power pack, and controls.

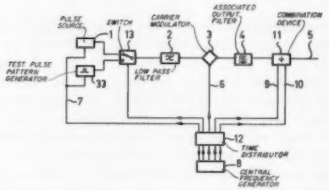
3,845,390

SYSTEM FOR AUTOMATIC EQUALIZATION

Frank De Jager; Peter Van der Wurf; Petrus Josephus Van Gerwen; Robert Johannes Sluyter, and Wilfred Andre Maria Snijders, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,318
Claims priority, application Netherlands, Dec. 1, 1971, 7116476; Oct. 4, 1972, 7213388
Int. Cl. H03h *7/36*
U.S. Cl. 325—42 **74 Claims**

1. A system for automatic equalization of the transmission characteristic constituted by the amplitude-frequency characteristic and the phase frequency characteristic of a transmission band associated with a transmission path and allotted to the transmission of information signals comprising a system input circuit arranged to receive said information signals, a frequency analyzer coupled to said system input circuit for splitting up said transmission band into a number of adjacent frequency subbands, said frequency analyzer comprising a delay circuit for delaying said information signals and a number of parallel output channels, each of said output channels incorporating a subband pass filter and an additional subband pass filter, each filter comprising weighting networks connected between points of different time delay in said delay circuit and a combining circuit for selecting one of said frequency subbands, said weighting networks in said subband pass filter and said additional subband pass filter being arranged so as to provide a sample anplitude-frequency characteristic for corresponding frequency subbands, and a constant mutual phase shift of $\pi/2$ between the phase-frequency characteristics of said corresponding subbandpass filters and additional subband pass filters, said subbandpass filters in all said parallel output channels being further arranged so as to jointly provide an uninterrupted pass region without reject areas for the frequency components of said information signals, said output channels further incorporating means for coupling the outputs of the combining circuits in said subbandpass filter and said additional subbandpass filter to a common channel output, said coupling means comprising phase control means constituted by a first and a second control circuit each having a control input and being coupled between said common channel output and the combining circuit in said subbandpass filter and said additional subbandpass filter, respectively, and amplitude control means having a control input and being coupled with said first and second control circuit, a control voltage generator comprising a number of comparator means



connected to said output channels for generating the control voltages for said phase control means and said amplitude control means, said comparator means comprising a phase comparator including a first and a second phase detector, each having one input coupled to the combining circuit in said subbandpass filter and said additional subbandpass filter, respectively, to receive at least one spectrum component of an adjusting signal transmitted through said transmission path to said system input circuit, and another input coupled to a local reference source producing a reference signal having spectrum components of the same frequency as those of said adjusting signal, said first and said second phase detector producing a first and a second phase control voltage, respectively, in response to the phase difference of the spectrum component of said adjusting signal at the output of the combining circuit in said subbandpass filter and said additional subbandpass filter, respectively, with respect to the spectrum component having the same frequency of said reference signal, said phase comparator further including means for applying said first and said second phase control voltage to the control input of said first and said second control circuit, respectively, said comparator means further comprising means coupled to combining circuits in said subbandpass and additional subbandpass filters and to a local amplitude reference circuit for producing an amplitude control voltage, and means for applying said amplitude control voltage to the control input of said amplitude control means, a system output circuit comprising means for coupling said common channel outputs to a common system output.

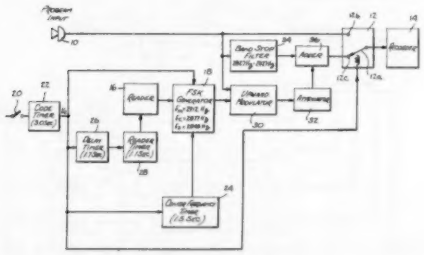
3,845,391
COMMUNICATION INCLUDING SUBMERGED IDENTIFICATION SIGNAL

Murray G. Crosby, Syosset, Long Island, N.Y., assignor to Audicom Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 848,381, July 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 530,563, Feb. 28, 1966,. This application July 15, 1971, Ser. No. 162,774

Int. Cl. H04b *9/00*

U.S. Cl. 325—64 **17 Claims**



1. The system for encoding transmitted audio program material comprising:

encoding means for generating a substantially inaudible, audio frequency code signal, the frequency band width occupied by said code signal being within the frequency band width of the audio program signal and being at least a decade in magnitude less than the frequency band width of the audio program signal, said code signal having an initial portion and an identification code portion,

said initial portion having a predetermined time duration sufficiently great to provide substantial distinction between said initial portion and the audio program material signal,

said identification code portion having at least one parameter with a value distinct from the value of the corresponding parameter of said initial portion,

first timing means coupled to said encoding means to limit the duration of said code signal to a first predetermined time period,

first generating means in said encoding means for generating said initial portion of said code signal,

second generating means in said encoding means for generating said identification code portion of said code signal, second timing means coupled to said second generating means for initiating the generation of said identification code portion after said initial portion has been generated for a second predetermined time period, said second predetermined time period being less that said first predetermined time period, and

means transmitting said audio frequency code signal simultaneously with the transmission of the associated transmitted audio program material.

3,845,392
BEACON TRANSMITTER

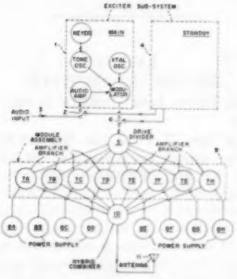
Dennis H. Covill, Hackett's Cove, Canada, assignor to Nautical Electronics Laboratories Limited, Nova Scotia, Canada

Continuation-in-part of Ser. No. 148,656, June 1, 1971, abandoned. This application Nov. 21, 1973, Ser. No. 417,883

Int. Cl. H04b *1/04*

U.S. Cl. 325—158 **5 Claims**

1. A radio transmitter comprising a low power radio frequency source; a splitter-isolator means having a plurality of outputs and one input, said input being connected to said source; a plurality of amplifier branches each having an input and an output, each input being connected to one output of said splitter-isolator means in a 1-to-1 correspondence whereby each of said branches amplify said signal; a combiner means having inputs each connected to one output of said amplifier branch in a 1-to-1 correspondence and providing an output which is the sum of the amplifier branch outputs and an antenna means fed by the output of said combiner means, said combiner means and antenna forming a constant load, each amplifier branch being characterized in that it includes a power amplifier stage, said power amplifier stage having an



input and an output and at least one transistor, said transistor having a grounded base electrode, the power amplifier stage input being connected to the emitter of said transistor via a matching transformer and an emitter-swamping resistor; the collector of said transistor being connected to said load via a transformer; said transformer having a leakage inductance such that when taken with the collector capacitance of said transistor and the resistance of said load, exhibits the response of a low-pass filter having a cut-off frequency above the usable frequency range of the transmitter.

3,845,393
COMMUNICATION RECEIVER WITH TUNING CIRCUITS THAT TRACK THE L.O.

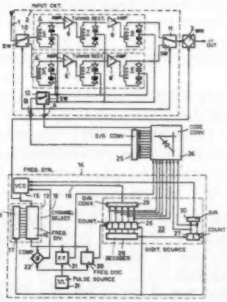
Jean-Claude Basset, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 340,955

Claims priority, application France, Mar. 17, 1972, 72.09445

Int. Cl. H04b *1/06*

U.S. Cl. 325—453 **7 Claims**



1. A circuit comprising a first tuned circuit having a voltage variable reactance element having a first voltage versus frequency characteristic; a frequency synthesizer including a

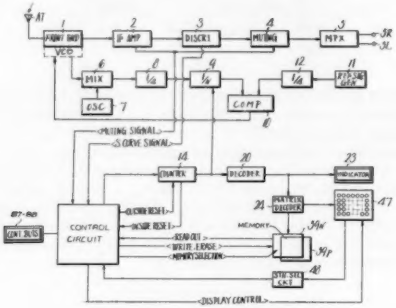
voltage controlled oscillator having a second control voltage verses frequency characteristic differing from said first characteristic, and a first control loop having means for generating a digital signal representative of a selected frequency coupled to said oscillator; and means for tracking the resonant frequency of said tuning tuned circuit with the oscillation frequency of said voltage controlled oscillator, said tracking means comprising means coupled to said digital generating means for code converting said digital signal into another digital signal compatible with said first characteristic, and a digital to analogue converter coupled to said code converter and said element.

3,845,394

BROADCAST RECEIVER

Osamu Hamada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,803
Claims priority, application Japan, Nov. 29, 1971, 46-96056
Int. Cl. H04b *1/26*
U.S. Cl. 325—455 **85 Claims**



1. A broadcast receiver comprising:

a. means for dividing a broadcast band into a plurality of frequency ranges,

b. display means having a plurality of indicator elements each corresponding to a respective one of said frequency ranges,

c. means for generating pulse signals upon each division of said broadcast band and for energizing the indicator element of said display means which corresponds to the respective divided frequency range,

d. memory means including a plurality of memory elements each corresponding to a respective one of said frequency ranges,

e. means for detecting the reception of broadcast signals, and

f. means responsive to the detection of broadcast signals by said detecting means for storing a signal in the memory element of said memory means which corresponds to the divided frequency range then obtaining.

3,845,395

HARMONIC SERIES SYNTHESIZER

Francis J. Murphree, McAllen, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

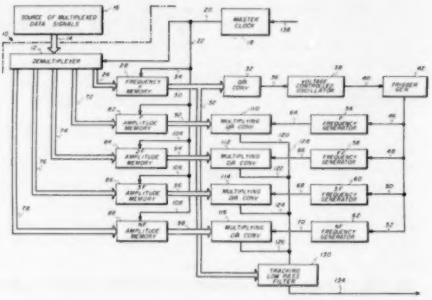
Filed Nov. 2, 1973, Ser. No. 412,069
Int. Cl. H03b *19/00*
U.S. Cl. 328—14 **11 Claims**

1. A harmonic series synthesizer for generating a complex waveform from data signals representing a fundamental frequency f and relative amplitudes of n harmonically related frequency components including said fundamental frequency, said synthesizer comprising:

fundamental frequency memory means, responsive to said data signals, for providing first digital word output signals representative of a predetermined fundamental frequency;

first digital to analog converter means, responsive to said first digital word output signals, for providing a first analog signal representative of said fundamental frequency;

controlled oscillator means, responsive to said first analog signal, for providing an oscillator signal proportional to M*f*, where M is a predetermined number of ordinate voltage values;



trigger generator means, responsive to said oscillator signal, for providing trigger pulses at said frequency M*f*;

n frequency generator means, responsive to said trigger pulses, for producing *n* sine wave signals of frequencies *f*, *2f*, *3f* . . . *nf*;

n amplitude memory means, responsive to said data signals, for providing n digital word output signals representative of predetermined amplitudes of corresponding ones of said *n* frequency components;

n attenuator means, responsive to said *n* sine wave signals and to said *n* digital word output signals, for attenuating said *n* sine wave signals to provide said *n* frequency components having said relative amplitudes; and

means for combining said *n* frequency components into a complex waveform output signal.

3,845,396

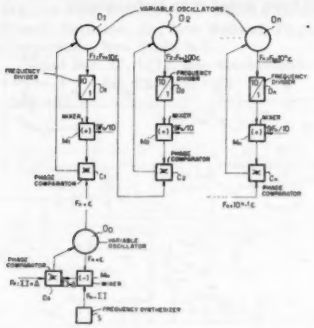
DEVICE FOR MULTIPLYING A FREQUENCY INCREMENT

Jacques Rutman, Fontenay Aux Roses, France, assignor to Adret-Electronique, Trappes, France

Filed Dec. 27, 1972, Ser. No. 318,922
Claims priority, application France, July 25, 1972, 72.26997
Int. Cl. H03b *19/00*
U.S. Cl. 328—15 **3 Claims**

1. Device for multiplying a frequency increment, including at least first and second phase locked loops each comprising a variable oscillator having a frequency control input and an output, a frequency divider with a dividing ratio k, said frequency divider having an input connected to the output of the variable oscillator and an output, additive mixing means having a first input connected to the output of the frequency divider said additive mixing means further having a second input and an output, a phase comparator having a first input connected to the output of the additive mixing means, a second input and an output, the output of the phase comparator being connected to the frequency control input of the variable oscillator, means for applying to the second input of the phase comparator of the first phase locked loop, a frequency comprising a constant term FO and a variable increment, and means for applying, to the second input of each of the additive

mixing means, a frequency $k - 1/k$ Fo, the output of the variable oscillator of the first phase locked loop being connected



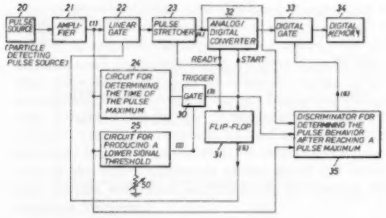
to the second input of the phase comparator of the second phase locked loop.

3,845,397

PULSE AMPLITUDE EVALUATION

Jurgen Schulz, Ulm, Donau, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 21, 1972, Ser. No. 317,249
Claims priority, application Germany, Dec. 22, 1971, 2163722; Nov. 30, 1972, 2258643
Int. Cl. H03k *5/20*
U.S. Cl. 328—117 **14 Claims**



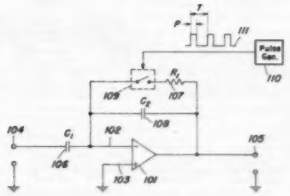
1. In a method for evaluating the amplitudes of pulses having a range of peak amplitudes, which exceed a given amplitude, the method including detecting each apparent pulse amplitude maximum, storing intermediately in a pulse stretcher an analog signal representing the maximum amplitude of a pulse, and subsequently converting the stored signal into a digital signal, the improvement comprising: electronically monitoring the pulse waveform for a given period of time after detection of an apparent pulse maximum amplitude; and electronically suppressing the utilization of the associated digital signal whenever said step of monitoring reveals that during the given period of time the amplitude of the pulse is increasing, which indicates that the registered maximum was an intermediate maximum caused by noise signals.

3,845,398

ADJUSTABLE TIME CONSTANT OPERATING CIRCUIT

Bernard Katz, 33 Phillip Pl., Irvington, N.J. 07111

Filed Feb. 23, 1972, Ser. No. 228,636
Int. Cl. G06g *7/18*
U.S. Cl. 328—127 **6 Claims**



1. In a differentiating circuit including the combination of an operational amplifier exhibiting relatively high input impedance and gain characteristics, an input capacitance means providing an input channel to an input terminal of said operational amplifier and feedback resistance means providing an electrical channel between an output terminal of said operational amplifier and said input terminal thereof, apparatus for adjusting the time constant of said differentiating circuit, comprising:

switch means coupled to said feedback resistance means and adapted to selectively interrupt said electrical channel upon the activation of said switch means, said feedback resistance means including first and second resistance means connected in series relationship and said switch means including a switching device connected to the junction formed by said first and second series connected resistance means, said switching device being operative to interrupt said electrical channel for a portion P of each periodic interval of time T such that said effective time constant of said differentiating circuit is adjusted by the factor $T/T-P$; and

energizing means coupled to said switch means for providing an activating signal to activate said switch means at periodic intervals of time, whereby the effective time constant of said differentiating circuit is dependent upon said periodic intervals, said energizing means generating a periodic signal having a duration P and a period equal to T.

3,845,399

DIGITAL DETECTOR OF AN ANALOG SIGNAL

Carlos D. Cardon, and Lawrence P. Griffone, both of Salt Lake City, Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 30, 1973, Ser. No. 393,117
Int. Cl. H03d *3/00*; **H03b** *3/04*; **H03k** *5/20*
U.S. Cl. 328—138 **3 Claims**

1. A digital detector of an analog signal, comprising:

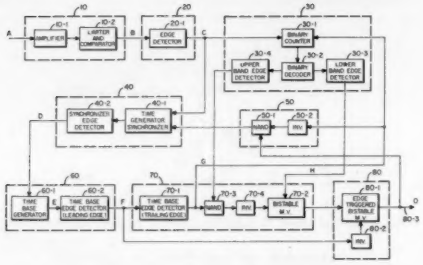
means receiving an input analog signal of a frequency F_A for generating a digital signal of a frequency F_A therefrom;

counting means coupled to said digital signal for counting the number of pulses N_A thereof during a preset sample time T_S and generating a decode True signal if the counted number of pulses is equal to or greater than a preset low N_L number of pulses and generating a decode False signal if the counted number of pulses is greater than a preset high N_H number of pulses for defining a preset bandwith $N_L \leq N_A \leq N_H$;

an output flip-flop for generating as the alternative output signals an output True signal or an output False signal indicating that said counting means has counted a number of pulses N_A of said digital signal that is within or without, respectively, said preset bandwidth;

a decoder flip-flop responsively coupled to said decode True signal and said decode False signal for storing a decoder True signal or a decoder False signal;

means gating the decoder True signal or the decoder False signal from said decoder flip-flop into said output flip-flop for storing and generating an output False signal or an output True signal, respectively, on a detector output line therefrom.



3,845,400

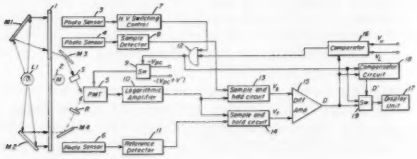
SIGNAL ANALYZING APPARATUS

Ying S. Yee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 324,630, Jan. 18, 1973, Pat. No. 3,807,877. This application Oct. 18, 1973, Ser. No. 407,741

Int. Cl. H03k *5/20, 17/30*

U.S. Cl. 328—151 **5 Claims**



1. In a system for analyzing a variable signal of unknown magnitude received from a source, the combination comrpising; comprising;

a substantially constant reference signal;

means for alternately sampling said variable signal and said reference signal repetitively;

means for generating an output voltage representing the difference in magnitude between said variable signal and said reference signal;

sensitivity control means responsive to said output voltage of a selected amplitude for altering the system sensitivity from a first level to a second level during the next sample of said variable signal; and

means for converting said output voltage into data representing a characteristic of said source.

3,845,401

SENSE AMPLIFIER THRESHOLD TESTER

Charles Troiani, and Gary L. Tolzman, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 5, 1973, Ser. No. 329,810

Int. Cl. G01r *19/00*

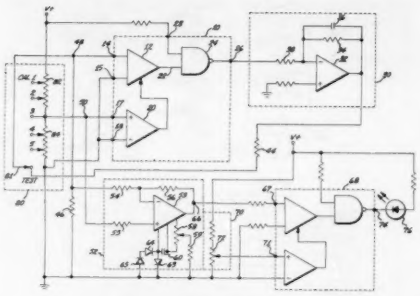
U.S. Cl. 330—2 **5 Claims**

1. A method for dynamically testing the threshold characteristics of a sense amplifier circuit, comprising the steps of:

applying a predetermined reference voltage to the sense amplifier being tested;

integrating a complement digital output signal of the sense amplifier being tested;

applying the integrated output signal to the sense amplifier circuit being tested as an input voltage;



detecting the difference between the predetermined reference voltage and the input voltage;

comparing the detected difference voltage with a predetermined error voltage;

rejecting the sense amplifier circuit being tested when the difference voltage exceeds the predetermined error voltage.

3,845,402

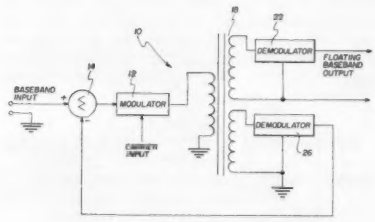
SONOBUOY RECEIVER SYSTEM, FLOATING COUPLER

Raymond W. Nupp, Rochester, N.Y., assignor to EDMAC Associates Inc., Rochester, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,626

Int. Cl. H03f *3/38*

U.S. Cl. 330—10 **1 Claim**



1. A floating coupler for a sonobuoy receiver system which in response to an input A. C. baseband ground reference signal and a carrier signal produces an output baseband signal decoupled from ground reference, comprising:

a. an A.M. pinch modulator responsive to the input signal and the carrier signal for amplitude modulating the carrier signal with the input signal;

b. transformer electrically coupled to said modulator;

c. first and second substantially identical demodulators coupled to said transformer and responsive to the modulated carrier signal so that said first demodulator produces the output signal and said second demodulator produces a feedback ground referenced baseband signal; and

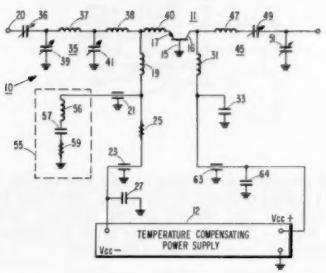
d. feedback means including a summing network responsive to the feedback ground reference signal produced by said second demodulator and the input signal for effecting a change in the input signal before it is received by said

modulator for reducing effects of non-linearities and gain changes in the floating coupler.

3,845,403
AMPLIFIER FOR AMPLITUDE MODULATED WAVES WITH MEANS FOR IMPROVING SIDEBAND RESPONSE

LeRoy Francis Heckman, Jr., New Holland, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 319,007
Int. Cl. H03f 3/04
U.S. Cl. 330—31 6 Claims



1. In an amplifier suitable for use in a television transmitter for amplifying amplitude modulated waves including a carrier frequency component and sideband frequency components over a desired carrier frequency band wherein said amplifier comprises:

a transistor device having input, output and common electrodes,

means including a resistor degeneratively coupled between said input and common electrode for forward biasing said transistor,

an input matching network coupled between said input and common electrodes for providing transfer of signal energy at the carrier and sideband frequencies to said transistor,

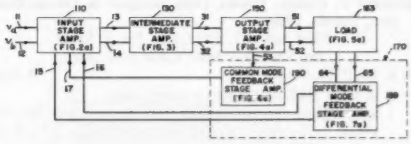
an output matching network coupled between said output and common electrodes for providing transfer of signal energy at said carrier and sideband frequencies out of said transistor, said amplifier characterized by an output which, in response to unmodulated waves over said desired carrier frequency band, exhibits a given amplification over the band and in response to an amplitude-modulated wave having a carrier frequency component and sideband frequency components of substantially uniform amplitude received by said amplifier, exhibits a decrease in amplification relative to said given amplification at the upper sidebands above about 0.5 MHz from said carrier with said amplification decreasing with increasing frequency,

the improvement therewith of a sideband peaking means coupled between said input and common electrodes and including a peaking circuit resonant at a frequency significantly lower than any of the frequencies within said desired carrier frequency band and a decoupling means coupled at one end between said peaking circuit and said input electrode and at the opposite end to a point of reference potential for rendering signal peaking circuit responsive only to signals at frequencies significantly lower than frequencies within said desired carrier frequency band, said peaking circuit responsive only to said signals at frequencies significantly lower than frequencies within said desired carrier frequency band and occurring during the reception of said received amplitude-modulated wave to increase the relative amplitudes of said upper sidebands at said amplifier output to at least compensate for said decrease in amplification at said upper sidebands.

3,845,404
DIFFERENTIAL AMPLIFIER HAVING ACTIVE FEEDBACK CIRCUITRY

Ted R. Trilling, Berkshire Rd., R.D. 3, Doylestown, Pa. 18901

Filed June 16, 1972, Ser. No. 263,505
Int. Cl. H03f 1/00
U.S. Cl. 330—69 6 Claims


INPUT STAGE AMP. (FIG. 2a)
INTERMEDIATE STAGE AMP. (FIG. 3)
OUTPUT STAGE AMP. (FIG. 4a)
LOAD (FIG. 5a)
COMMON MODE FEEDBACK STAGE AMP. (FIG. 6a)
DIFFERENTIAL MODE FEEDBACK STAGE AMP. (FIG. 7a)

1. A differential amplifier system comprising:

an input circuit connected to receive an input signal having common mode and differential mode components, and common mode and differential mode feedback signals for controlling the impedance and gain of said input circuit, and for supplying a first output signal;

an output circuit connected to receive and amplify said first output signal, and for supplying a second output signal having both common mode and differential mode components to a load and a third output signal;

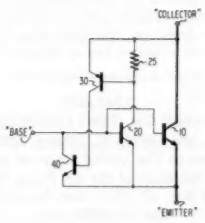
first active feedback means connected to receive and amplify the second output signal and for supplying only the differential mode feedback signal to said input circuit; and

second active feedback means connected to receive and amplify the third output signal and for supplying the common mode feedback signal to said input circuit.

3,845,405
COMPOSITE TRANSISTOR DEVICE WITH OVER CURRENT PROTECTION

Arthur John Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 24, 1973, Ser. No. 363,599
Int. Cl. H03f 3/04
U.S. Cl. 330—207 P 7 Claims



1. A composite transistor device with over-current protection comprising:

a power transistor and an auxiliary transistor thermally coupled to each other, each having a collector electrode, each having a base electrode which base electrodes are interconnected, and each having an emitter electrode which emitter electrodes are interconnected;

a connection between the collector electrodes of said power and said auxiliary transistors;

means for detecting when the collector current flow of said auxiliary transistor flowing through said connection exceeds a predetermined value thus to provide a signal indicative of an over-current condition; and

means for clamping the potential appearing between the base and the emitter electrodes of said power transistor in response to said signal indicative of an over-current condition.

3,845,406

LASER GLASS HOST COMPOSITIONS COMPRISING TEO , BAO AND PBO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 373,923
Int. Cl. H01s *3/00;* **C03c** *3/12, 3/30*
U.S. Cl. 331—94.5 E **6 Claims**

1. A laser glass composition comprising:
1. a host glass containing about 70–86 mole percent TeO_2, about 2–25 mole percent BaO, and about 0.2–18 mole percent PbO; and
2. an effective lasing amount of Nd_2O_3.

3,845,407

LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2, CAO AND ZNO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 373,924
Int. Cl. H01s *3/00;* **C03c** *3/12, 3/30*
U.S. Cl. 331—94.5 E **8 Claims**

1. A laser glass host composition comprising TeO_2, CaO and ZnO in which the proportions of TeO_2, CaO and ZnO in molar amounts are defined by the area within the heavy lines connecting the points ABCD of the ternary diagram of the FIGURE of the drawings, the laser glass host composition being a host for an effective lasing amount of Nd_2O_3.

3,845,408

LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2, SRO AND ZNO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 373,925
Int. Cl. H01s *3/00;* **C03c** *3/12, 3/30*
U.S Cl. 331—94.5 E **8 Claims**

1. A laser glass, host composition comprising TeO_2, SrO and ZnO in which the proportions of TeO_2, SrO and ZnO in molar amounts are defined by the area within the heavy lines connecting the points ABSDEF of the ternary diagram of the FIGURE of the drawings, the laser glass host composition being a host for an effective lasing amount of Nd_2O_3.

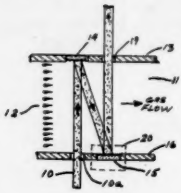
3,845,409

LASER GR. TING COUPLERS

James Y. Wada, and Gareth M. Janney, both of Los Angeles, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 27, 1973, Ser. No. 419,458
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 C **2 Claims**

1. Grating reflectors for optical systems exposed to high speed gas flow comprising a channel, said channel having first and second walls opposite to each other, each wall having an inner surface, a gas medium flowing at high speed within said channel, an opening in said first channel wall, a first grating reflector having an inner surface, said grating reflector pressure fitted into said second channel wall with the inner surface thereof flush with said inner surface of said second channel wall, said grating reflector being directly opposite to said opening in said first channel wall, a second grating reflector also having an inner surface, said second reflector being pressure fitted in said first channel wall to permit the inner surface thereof to be flush with the inner surface of said first channel wall, said second grating reflector being positioned at a predetermined distance from said opening, a mirror having an inner surface, said mirror pressure fitted into said second channel wall and having the inner surface thereof flush with said inner surface of said second channel wall, said mirror being directly opposite to said second grating reflector. and a laser beam



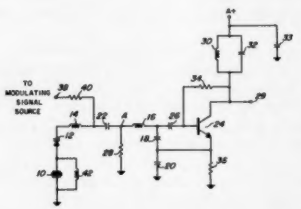
directed through said opening to said first grating reflector, said first grating reflector directing said laser beam at a preselected angle to said second grating reflector, said second grating reflector directing said laser beam through said mirror to provide an output laser beam therefrom.

3,845,410

CRYSTAL OSCILLATOR HAVING SPURIOUS OSCILLATION SUPPRESSION CIRCUIT

Francis R. Steel, Pompano Beach, Fla., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 9, 1973, Ser. No. 404,530
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R **9 Claims**

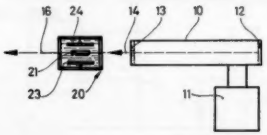


1. A crystal controlled oscillator comprising:
a piezoelectric resonator having a predetermined operating frequency and other spurious operating frequencies;
inductance means and capacitance means connected in series with said piezoelectric resonator to form a first resonant circuit, said inductance means and said capacitance means being series resonant at said predetermined operating frequency;
second inductance means and second capacitance means connected in series to form a second resonant circuit, said second inductance means and said second capacitance means being series resonant at said predetermined operating frequency;
resistance means;
means connecting said resistance means in shunt with said first and second resonant circuits; and
amplifier means connected to one of said first and second resonant circuits for energizing said resonant circuits to oscillate at said predetermined operating frequency.

3,845,411
OPTICAL HOLMIUMETHYLSULPHATE MODULATOR

Klaus-Dieter Erben; Walter Kroy, and Walter E. Mehnert, all of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Continuation of Ser. No. 886,626, Dec. 19, 1969, abandoned.
This application Aug. 21, 1972, Ser. No. 282,473
Int. Cl. H01s 3/10
U.S. Cl. 332—7.51 12 Claims

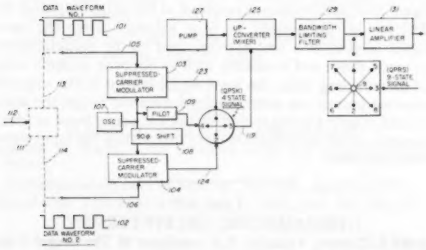


1. An infrared radiation modulation apparatus, comprising:
a single crystal consisting of holmiumethylsulphate, said crystal being adapted for irradiation with infrared radiation;
means for irradiating said crystal with coherent infrared radiation; and
means coupled to said crystal for modulating said infrared radiation.

3,845,412
DIGITAL MODULATE/DEMODULATE SYSTEM

Richard H. Rearwin, Concord, and Milton A. Crandall, Newton, both of Mass., assignors to Microwave Associates, Inc., Burlington, Mass.

Filed Oct. 12, 1973, Ser. No. 405,882
Int. Cl. H03k 7/02
U.S. Cl. 332—9 R 22 Claims

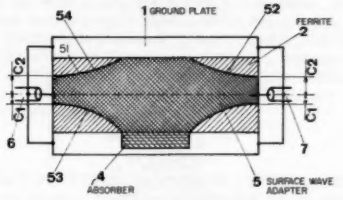


1. A digital information signal modulating system comprising means to provide a two-state NRZ digital waveform having a known clock period, means to provide a carrierfrequency wave, means to apply said digital waveform to double-phase-shift modulate said carrier wave at a known substantially constant amplitude, means to create a three-state waveform representative of said digital waveform including partial-response filter means having an input and an output, and means to apply said modulated wave to said input, said filter means having a bandwidth so limited that in a time interval equal to one clock period of said digital waveform said modulated wave traversing it cannot swing more than approximately one-half said amplitude as seen at said output.

3,845,413
WIDEBAND NON RECIPROCAL INTEGRATED CIRCUITS UTILIZING SURFACE WAVE PROPAGATION

Bernard Chiron; Claude Rannou, and Nicole Bernard, all of Paris, France, assignors to Societe Lignes Telegraphiques Et Telephoniques, Paris, France

Continuation of Ser. No. 259,074, June 1, 1972, abandoned.
This application Oct. 23, 1973, Ser. No. 408,858
Int. Cl. H01p 1/32
U.S. Cl. 333—1.1 57 Claims



1. A wideband non-reciprocal device for UHF/VHF and microwave frequency bands designed according to microwave integrated circuit technology based on the non-reciprocal properties of gyromagnetic materials coupled with an electromagnetic wave which propagates along an axis according to a surface mode of the TM, quasi-TM or hybrid HE_{11} type, with a r.f. field, the electric field vector of which has two components, one of which lies along said axis, said device comprising:
a medium serving as a propagation support for the surface wave and consisting at least partly of gyromagnetic material having permeability μ_f, and permittivity ϵ_f at zero external magnetizing field and a first dimension extending along the entire length of the propagation path in a direction along the axis of propagation and having two other dimensions small in relation to said first dimension;
means for establishing an external magnetizing field perpendicular to said propagation axis, in at least a part of said gyromagnetic material, of such a value that the permeability of said gyromagnetic material subjected to said field, μ_H, is very different from μ_f, along at least one of the forward and reverse directions of propagation along said axis;
input means for feeding said device with a TEM space wave; means for transforming the input TEM space wave into a TM, quasi-TM or quasi hybrid HE_{11} surface wave, and for transforming the surface waves into an output TM space wave; and
output means for coupling a TEM space wave out of said device.

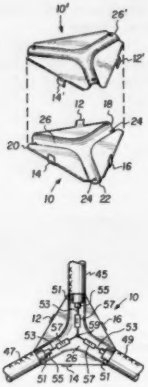
3,845,414
SHIELDING APPARATUS FOR A SIGNAL SPLITTER AND SIGNAL SPLITTER INCLUDING THE SAME

Robert W. McKenzie, Lewisville, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 16, 1973, Ser. No. 416,482
Int. Cl. H01p 5/12
U.S. Cl. 333—6 7 Claims

1. Apparatus for use in conjunction with shielding a signal splitting pad comprising:
a generally equilateral triangularly shaped piece of metal having three vertexes and three sides and a groove extending from one vertex to a common central portion in said piece of metal and thenceforth to the remaining two vertexes; and

tab means located near the middle of each of the three sides, each of the tabs being offset on the side such that



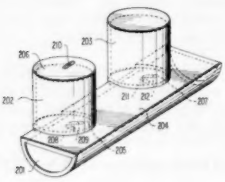
it is closer to one of the vertexes than any of the other tabs.

3,845,415

CHANNEL DIPLEXER WHEREIN COUPLING APERTURES BALANCE AND CANCEL OUT UNDESIRED MODES

Masaki Ando, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Oct. 4, 1973, Ser. No. 403,348
Claims priority, application Japan, Oct. 5, 1972, 47-100447
Int. Cl. H01p *1/16, 1/20, 5/12*
U.S. Cl. 333—6 **9 Claims**



1. A channel diplexer comprising:

a semi-circular waveguide adapted to receive n channel signals having center frequencies $f_1, \ldots f_{i-1}, f_i, f_{i+1}, \ldots f_n$;

at least two cylindrical cavity resonators having resonant frequencies f_i attached to the plane conductor wall of said semi-circular waveguide;

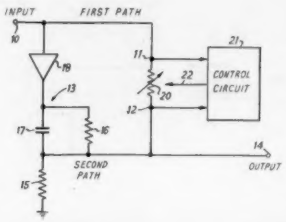
the first of said resonators having a coupling aperture in its external circular conductor end wall adapted to couple energy in said resonator to an external output circuit; and said plane conductor wall common to each of said resonators having a plurality of coupling apertures for coupling and exciting the desired TE_{011} mode in said two cylindrical cavity resonators, said apertures being angularly positioned with respect to each other to be balanced with respect to the electro-magnetic fields in said semi-circular waveguide so that at least the TE_{311} undesired resonant mode is prevented from being excited in said two cylindrical cavity resonators.

3,845,416

SIGNAL COMPRESSORS AND EXPANDERS

Ray Milton Dolby, London, England, assignor to Dolby Laboratories Inc., New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 396,015
Claims priority, application Great Britain, Mar. 12, 1971, 6747/71
Int. Cl. H04b *3/06;* **H03g** *5/16;* **H03h** *7/16*
U.S. Cl. 333—14 **21 Claims**



1. A circuit for modifying, within a predetermined input dynamic range, the dynamic range of an input signal comprising an input terminal and a first terminal, a first circuit path connected between the input terminal and the first terminal, the first path passing said input signal to said first terminal with dynamic range linearity, a second circuit path connected to said input terminal and having a second terminal, and an output terminal, a variable coupling means including at least one variable impedance providing a variable degree of coupling between the first and second terminals, the second circuit path including at least one impedance element which is connected to the second terminal, the frequency response of the said circuit being determined at least in part by the interacting combination of said impedance element and said variable impedance and varying as the degree of coupling between the first and second terminals provided by the variable coupling means varies, the variable coupling means being arranged so to vary in dependence upon the level of a signal existing in the circuit as to assume such a first extreme value of the coupling between the first and second terminals that the signal level and frequency response at the output terminal are determined substantially by fixed elements when the input signal level is in a first extreme part of the predetermined dynamic range and to assume such an opposite extreme value of the coupling when the input signal level is in the opposite extreme part of the predetermined dynamic range, the sense of said coupling being to narrow the frequency band in which dynamic range modification takes place when the input signal level increases.

3,845,417

GYROMAGNETIC CIRCUIT ELEMENT

John F. Zaleski, Valhalla, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Feb. 21, 1958, Ser. No. 716,816
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.1 **13 Claims**

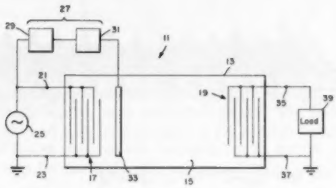
1. A circuit element, comprising, a tubular ferrite body having a length greater than its circumference, a conductive

member encircling said body, said member being electrically insulated from all other conductive members, and means for applying a unidirectional magnetic field to said body.

3,845,418
ACOUSTIC SURFACE WAVE DEVICE WITH REDUCED RF FEEDTHROUGH

Rolf D. Weglein, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 2, 1974, Ser. No. 430,360
Int. Cl. H03h *9/26, 9/30;* **H01v** *7/00*
U.S. Cl. 333—30 R **8 Claims**

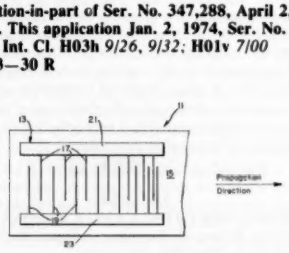


1. An acoustic surface wave device, comprising:
a substrate of piezoelectric material capable of propagating acoustic surface wave energy;
transducer means including at least a launching transducer for converting an electrical input signal into acoustic surface waves propagating along said substrate, and including an associated receiving transducer for converting said acoustic surface waves incident thereon into electrical signals with a delay essentially determined by the propagating velocity characteristic of the substrate material and by the distance between said launching and receiving transducers, said distance being sufficiently small that a direct r.f. feedthrough signal coupling exists between said transducers; and
bucking means including a phase shifting electrical arrangement coupled to the electrical input of said launching transducer and also including a conductive bucking electrode structure disposed adjacent said launching transducer and coupled to said electrical arrangement for coupling directly to said receiving transducer a bucking signal of equal magnitude and opposite phase than that of said direct r.f. feedthrough signal.

3,845,419
ACOUSTIC SURFACE WAVE DEVICE

Graham R. Nudd, 1355 Brinkley Ave., Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 347,288, April 2, 1973, abandoned. This application Jan. 2, 1974, Ser. No. 430,379
Int. Cl. H03h *9/26, 9/32;* **H01v** *7/00*
U.S. Cl. 333—30 R **2 Claims**



1. An acoustic surface wave device having a flat band response, comprising:
a substrate of piezoelectric material capable of propagating acoustic surface wave energy; and
transducer means including at least one interdigitated-type electro-acoustic transducer having a plurality of equally-overlapped electrodes for providing a dispersion expressed by

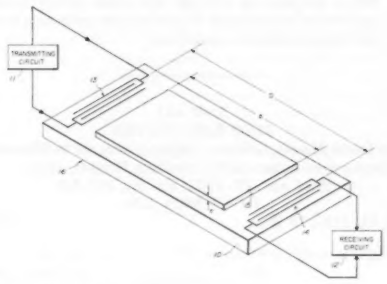
$$df/dt \simeq -\left[\frac{2f}{1+\sqrt{\frac{2N_T f_{hi} f_{lo}}{B}}\, T(f) f^{-1/2}}\right]^2$$

where $T(f)$ is the relative conversion efficiency at frequency f, N_T is the total number of transducer electrodes, B is the band pass having a highest synchronous frequency f_{hi} and a lowest synchronous frequency f_{lo}, and t_n and t_{n-1} are the delays to the nth and $n-1$ transducer electrodes, successive ones of said electrodes being spaced at intervals of π radians such that $\Phi(t_n) - \Phi(t_{n-1}) = \pi$ with $\Phi(t) = 2\pi$ *df/dt dt/dt*, where Φ is the relative phase.

3,845,420
SURFACE ACOUSTIC WAVE PHASE CONTROL DEVICE

Melvin G. Holland, Lexington; Manfred B. Schulz, Sudbury, and Harrison H. Barrett, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 2, 1973, Ser. No. 337,346
Int. Cl. H03h *9/26, 9/30, 9/32*
U.S. Cl. 333—30 R **18 Claims**



1. In combination:
means for propagating a surface wave in a piezoelectric material; and
means for varying the velocity of said surface wave over at least a portion of said piezoelectric material, the velocity of said surface wave over said portion of said piezoelectric material being substantially independent of the mass of said velocity varying means and said velocity varying means operating independently of mechanical properties of said piezoelectric material said velocity varying means having a thickness in the range of 100 A to 300 A.

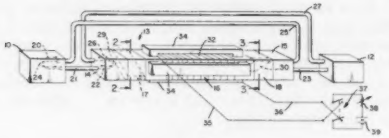
3,845,421
POLARIZATION INSENSITIVE TRANSMISSION PHASE SHIFTER

Donald A. Charlton, Huntington Beach, and Chao C. Chen, Cerritos, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 2, 1974, Ser. No. 430,340
Int. Cl. H01p *1/16;* **H03h** *7/20*
U.S. Cl. 333—31 R **10 Claims**

1. A polarization insensitive phase shifter comprising:
first and second bilateral transducers each having first, second and third terminations for resolving electromagnetic energy available at said first termination thereof into a first component available at said second termination and a second component orthogonal to said first component available at said third termination;
a bilateral phase shifter having first and second terminations;

means coupled from said termination of said first transducer and from said third termination of said second transducer to said first termination of said phase shifter for launching electromagnetic energy available at a selected one of said first or second transducers through said phase shifter away from said first termination thereof and for coupling electromagnetic energy propagating through said phase shifter towards said first termination thereof to the remaining one of said first or second transducers;



means coupled from said third termination of said first transducer and from said second termination of said second transducer to said second termination of said phase shifter for launching electromagnetic energy available at said selected one of said first or second transducers through said phase shifter away from said second termination thereof and for coupling electromagnetic energy propagating through said phase shifter towards said second termination thereof to said remaining one of said first or second transducers.

3,845,422

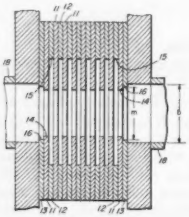
STOP BAND FILTER

John David Rhodes, Guiseley, England, assignor to Microwave Development Laboratories, Needham Heights, Mass.

Filed Apr. 17, 1973, Ser. No. 351,860

Int. Cl. H01p *1/20*

U.S. Cl. 333—73 W **1 Claim**



1. A narrow band band-stop filter for use with a waveguide having dimensions a and b and comprising:

a first set of relatively thin plates respectively defining a first set of iris-defining apertures having an aperture dimension *c*,

a second set of relatively thin plates respectively defining a second set of iris-defining apertures having an aperture dimension **l**,

said aperture dimension l being larger than said aperture dimension *c* and larger than the waveguide dimension *b*, said first and second sets of plates all being of approximately the same individual thickness *t* and being disposed in alternating sequence forming corrugations;

an aperture difference dimension p being defined as: $p = l - c/2$

wherein the stop bandwidth is a function of the ratio: $4t^2/bp$ and the ratio t^2/p is caused to be made small by constructing the plates on the order of 0.1 inches thick or smaller and making the *p* dimension on the order of a quarter wavelength at the center frequency of the stop band,

and means coupling the filter to separate waveguide sections.

3,845,423

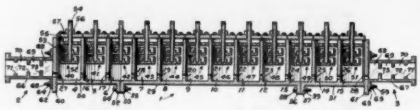
LOW LOSS HIGH-Q FILTER

Harry Scheiner, New City, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 26, 1973, Ser. No. 400,775

Int. Cl. H01p *7/06*

U.S. Cl. 333—73 W **18 Claims**



1. A low loss high-Q filter comprising:

a plurality of right circular cylindrical cavity resonators;

a first plurality of rectangular waveguide cavity resonators connected to one end of said cylindrical resonators;

a second plurality of rectangular waveguide cavity resonators connected to the other end of said cylindrical resonators;

first means for direct coupling of said cylindrical resonators in series and for direct coupling to said first and second waveguide resonators; and

second means for direct coupling of each of said first and second plurality of waveguide resonators in series;

each of said cylindrical resonators having a longitudinal axis and each of said cylindrical resonators being oriented with respect to each other so that each of said longitudinal axes are parallel with respect to each other;

said first means including

a plurality of circular apertures, each of said plurality of apertures being disposed adjacent the bottom of an associated one of said cylindrical resonator, at right angles to said longitudinal axis of said associated one of said cylindrical resonators and to extend through the cylindrical wall of said associated one of said cylindrical resonators to provide direct coupling between adjacent ones of said cylindrical resonators, and

a pair of circular apertures, one of said pair of circular apertures being disposed adjacent the bottom of a first of said cylindrical resonators, at right angles to said longitudinal axis of said first of said cylindrical resonators and to extend through the cylindrical wall of said first of said cylindrical resonators to provide direct coupling to said first plurality of waveguide resonators, and the other of said pair of circular apertures being disposed adjacent the bottom of a last of said cylindrical resonators, at right angles to said longitudinal axis of said last of said cylindrical resonators and to extend through the cylindrical wall of said last of said cylindrical resonators to provide direct coupling to said second plurality of waveguide resonators.

3,845,424

SUPERCONDUCTING CAVITY RESONATOR

Hans Martens, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Dec. 11, 1972, Ser. No. 313,998

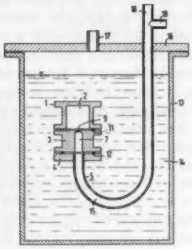
Claims priority, application Germany, Dec. 24, 1971, 2164529

Int. Cl. H01p *1/00, 7/06*

U.S. Cl. 333—83 R **5 Claims**

1. A superconducting cavity resonator with one or more tubular lines for coupling electromagnetic energy in and out

of the resonator with a coolant vessel surrounding said superconducting cavity resonator wherein the invention comprises tubular lines for coupling having a bend prior to opening into



said resonator cavity, with said lines opening into said cavity from below and said bend situated in the coolant vessel lower than the lowest point of the resonator cavity and acting as a cooling trap for gas molecules entering through said lines.

3,845,425.

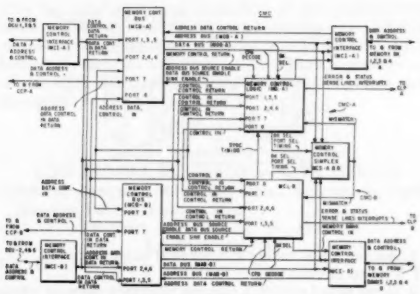
METHOD AND APPARATUS FOR PROVIDING CONDITIONAL AND UNCONDITIONAL ACCESS TO PROTECTED MEMORY STORAGE LOCATIONS

John L. Clements, Naperville; Paul J. Keehn, Glen Ellyn; Leo V. Jones, Jr., Chicago, and Paul A. Zelinski, Elmhurst, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 15, 1973, Ser. No. 370,279

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 **8 Claims**



1. In communication switcing system including switching network means and a data processing unit for controlling apparatus to effect connections over said switching network means, a memory control arrangement in said data processing unit including central processor means, main memory means having a plurality of addressable data storage locations for storing data words for use by said central processor means, each data word having a plurality of data bits and at least one memory protect bit, auxiliary memory means for storing further data words for use by said central processor means, and computer memory control means for permitting access to said main memory means by said auxiliary memory means or said central processor means, said computer memory control means having a plurality of input/output ports including a separate port for each of said auxiliary memory means and said central processor means for enabling said auxiliary memory means and said central processor means to address data storage locations of said main memory means over the associated port to permit modification or readout of a data word stored at an addressed location of said main memory means, port select means for selecting one of said ports in response to memory access data, including the address of a data storage location of said main memory means, supplied to said one port by the auxiliary memory means or the central processor means associated therewith, said port select means being operable to extend the address supplied over the selected port to said main memory means to effect the read out of the data word at the addressed location, first means enabled when the data word stored at the addressed location of said main memory means is read out for determining if the memory protect bit of the data word read out is in a first state indicating that the data word is protected, and second means controlled by said first means for normally preventing the central processor means from writing into said addressed location whenever the memory protect bit of the data word read out is in said first state.

3,845,426

DIPOLE MODE ELECTROMAGNETIC WAVEGUIDES

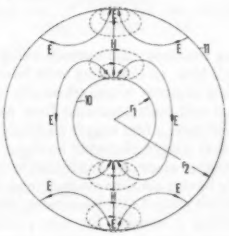
Harold Everard Monteagle Barlow, Epsom, Surrey, England, assignor to National Research Development Corp., London, England

Filed July 24, 1972, Ser. No. 274,619

Claims priority, application Great Britain, Aug. 2, 1971, 36203/71; Dec. 20, 1971, 58951/71

Int. Cl. H01p *3/06, 3/10*

U.S. Cl. 333—95 S **30 Claims**



1. A transmission line for supporting electromagnetic waves, including:

a first elongated member,

dielectric surrounding the first member and adapted to support propagation of a first surface wave along the interface between the first member and the dielectric, and

a second elongated member, in which the second member surrounds the said dielectric and is adapted to support the propagation of a second surface wave along the interface between the second member and the dielectric, the transverse and longitudinal surface impedances of the second member being different, and

the transverse dimensions of the first and second members and the impedances of the outer surface of the first member and the inner surface of the second member being so chosen to cooperate in causing the transmission line to support electromagnetic waves in the dipole mode with said first and second surface waves being constitutents of the waves propagated in said dipole mode.

3,845,427

INSULATING CONE PLASMA ENHANCEMENT CONFIGURATION FOR A PLASMA WAVEGUIDE SWITCH

David C. Schubert, Pasadena, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

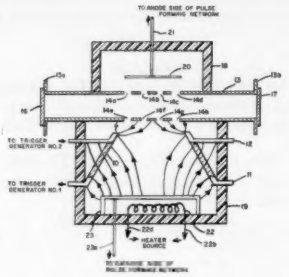
Filed Nov. 14, 1973, Ser. No. 415,893

Int. Cl. H01p *1/14*

U.S. Cl. 333—98 S **4 Claims**

1. A plasma waveguide switch for broadband control of RF energy transmission comprised of a section of waveguide

having opposite walls, each of said walls having a set of slots in the center portion thereof to provide first and second sets of slots, said section of waveguide having first and second ends, first and second pressure windows airtight sealed to said first and second ends for entrance and exit of RF energy, respectively, a first insulating envelope airtight sealed to one of said opposite walls fully encompassing said first set of slots, a second insulating envelope airtight sealed to the other of said opposite walls fully encompassing said second set of slots, an anode in said first insulating envelope physically separated from and adjacent to said first set of slots, said anode being connected to a first external lead, a cathode positioned in said



second insulating envelope, said cathode being connected to a second external lead, an insulating cone having a base and apex with the base adjacent to and physically separated from said cathode and said apex separated from and adjacent to said second set of slots, a first trigger electrode connected to said base, said first trigger electrode having a third external lead, a second trigger electrode connected to said apex, said second electrode having a fourth external lead, said section of waveguide, first and second envelopes being airtight sealed to each other forming a housing for said plasma waveguide switch, and a low pressure controlled atmosphere in said housing for supporting a glow discharge.

3,845,428

PUSHBUTTON CHANNEL SELECTOR FOR VARIABLE CAPACITY DIODE TUNER

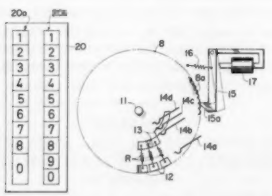
Yasuhiro Wada, Fujimi, and Katsuhiko Okabe, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-To, Japan

Filed July 26, 1973, Ser. No. 382,876

Claims priority, application Japan, July 28, 1972, 47-75033

Int. Cl. H03j *5/08*

U.S. Cl. 334—7 **6 Claims**



1. A broadcast channel selecting means for all-channel tuners comprising first push button each bearing a numeral from "0" at least up to "6" and arranged in one row in the order of those numerals, first operating links respectively fixed to said first push buttons, second push buttons each bearing a numeral from "0" through "9" and arranged adjacent to said first push buttons in one row in the order of those numerals, second operating links respectively fixed to said second push buttons, a first holding plate respectively engageable with said first push buttons and movable in the direction at a right angle to the moving direction of said first push buttons, a second holding plate respectively engageable with said second push buttons and movable in the direction at a right angle to the moving direction of said second push buttons, first switches arranged adjacent to said first push buttons and closed by said first push buttons, second switches respectively arranged adjacent to said second push buttons and closed by said second push buttons, first contactors respectively connected to said second switches, a first rotary disk electrically connected to said first contactors and having a first non-conductive portion thereon, second contactors respectively connected said first switches, a second rotary disk electrically connected to said second contactors and having a second non-conductive poriton thereon and intermittently rotated by said first rotary disk, a motor connected to said first rotary disk for rotating said first rotary disk, and a channel decoder connected to said motor and rotated by said motor, one terminal of said motor being electrically connected to said first and second rotary disks respectively.

3,845,429

SELF-TUNING UNITS

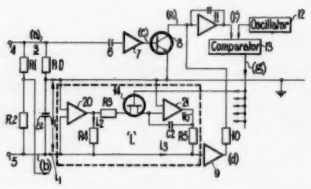
Frederick Martin Gray, 520 Burton Manor Rd., Stafford, Staffordshire, England

Filed May 31, 1973, Ser. No. 365,505

Claims priority, application Great Britain, July 10, 1972, 32195/72

Int. Cl. H03j *3/04*

U.S. Cl. 334—16 **7 Claims**



1. An automatic tuning arrangement comprising:

i. a tuned circuit;

ii. in the tuned circuit, a variable reactance element whose value determines the resonance frequency of the tuned circuit;

iii. in the variable reactance element, an impedance element whose value determines the value of the variable reactance element;

iv. a switching element connected with said impedance element so that the value of the variable reactance element depends on the ratio of the on time to the off time of the switching element;

v. a pulse generating circuit for producing a pulse train of high frequency compared with an input signal;

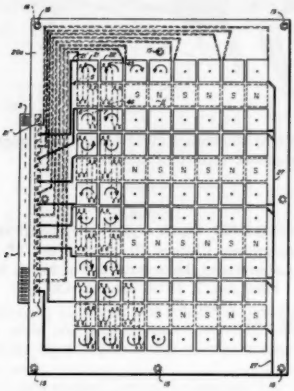
vi. means for utilizing the pulse train to operate the switching element so that the variable impedance element takes up a value dependent on the mark/space ratio of the pulse train; and

vii. means for varying the mark/space ratio of the pulse train in response to a difference between the resonance frequency of the tuned circuit and the frequency of the input signal in such a sense as to tend to maintain the tuned circuit in resonance with the input signal.

3,845,430
PULSE LATCHED MATRIX SWITCHES

Frank J. Petkewicz, Chicago; Von W. Mueller, Lombard; Khaja M. Jameel, Elmhurst, and Arvids Emkalns, Elk Grove Village, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 23, 1973, Ser. No. 390,999
Int. Cl. H01h *67/30*
U.S. Cl. 335—108 **16 Claims**

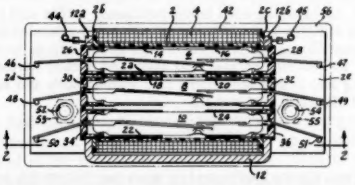


1. A pulse-actuated reed switching matrix of the magnetically latching type, comprising a planar printed circuit board, a coordinate array of substantially coplanar reed capsules, each including a pair of cooperating contact blades of magnetic material, said reed capsule array being supported by said printed circuit board and oriented such that the plane of said array is parallel to the principal plane of said printed circuit board and, superposed on said reed capsule array, substrate means having a coordinate array of printed circuit windings formed thereon for selectively effecting the operation and release of the reed capsules of said first mentioned array under the control of said pulses.

3,845,431
LOW PROFILE ELECTROMAGNETIC RELAYS

James A. Bongard, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 18, 1973, Ser. No. 407,438
Int. Cl. H01h *51/28*
U.S. Cl. 335—152 **9 Claims**

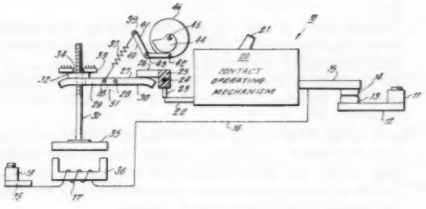


1. A low profile encapsulated relay comprising:
- a coil bobbin of insulating material having a bore therethrough;
- a coil wound on said bobbin;
- a U-shaped magnetic frame having apertures in its arms corresponding to the ends of said bore;
- shoulders at the ends of said bobbin providing grooves to slidably receive and retain the arms of said magnetic frame so that the apertures therein register with said bore; tubular core poles extending through said apertures to retain said frame on said bobbin and to establish the position of a concentration of magnetic flux;
- a sealed switching unit coaxially located within said core poles so that the magnetic gap of the switching unit is located in said concentration of magnetic flux;
- resilient plugs at the ends of said core poles for retaining and fixing the position of said switching unit in said core poles and thereby also fixing said magnetic gap of the switching unit in said concentration of magnetic flux and having holes through which the switching unit terminals extend and are located;
- a first pair of terminals having said coil connected thereacross;
- means mounting said first pair of terminals to said bobbin; a second pair of terminals connected to the terminals of said switching unit;
- and said relay being embedded in casting material with the ends of said pairs of terminals exposed for making connection thereto and mounting means in the form of two holes case in the embedding material.

3,845,432
INSTANTANEOUS TRIP MEANS

Gustave E. Heberlein, Jr., Chalfont, and Frank W. Kussy, Haverford, both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Dec. 27, 1973, Ser. No. 428,884
Int. Cl. H01h *71/74*
U.S. Cl. 335—176 **2 Claims**



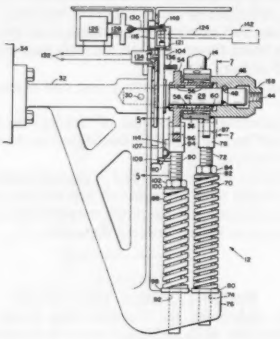
1. A circuit breaker including cooperating contact means, an operating mechanism for opening and closing said contact means, trip means including an electromagnet comprising a relatively stationary section and an armature mounted for movement toward said relatively stationary section to a trip position from a normal position remote from said stationary section, said armature moving to said trip position upon the occurrence of fault current above a predetermined level, thereby automatically actuating said operating mechanism to open said contact means, a trip member interposed between said armature and said operating mechanism, a spring means acting through said trip member to bias said armature toward said normal position, a pivot about which said trip member pivots as said armature moves from the normal position to the trip position, a relatively fixed anchor for one end of said spring means and another anchor connecting the other end of the spring means to the trip member at a point very close to said pivot to minimize increased loading of said spring as the armature moves toward the trip position; adjustable means to adjust biasing forces exerted by said spring means on said armature by repositioning the relatively fixed anchor without altering the normal position of the armature; said adjustable means including a cam means selectively operable to reposition the relative fixed anchor; a pivotally mounted element which carries the relatively fixed anchor, said spring means biasing a follower portion of said element into operative engagement with said cam means.

3,845,433

SWITCH OPERATOR WITH TRIPPING MEANS

John E. Kraulits, Norfolk, Mass., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Sept. 28, 1973, Ser. No. 401,939
Int. Cl. H01h 3/02
U.S. Cl. 335—254 19 Claims



1. An operator for a switch having, in combination,
a shaft,
a drive arm actuator pivotal on the shaft and having closing spring means tending to rotate the drive arm actuator in a first direction to a predetermined closed switch position,
a tripping plate pivotal on the shaft, having trip spring means tending to rotate the tripping plate in the opposite direction, and having means abutting the drive arm actuator to cause a transfer of energy from the trip spring means to the closing spring means during said opposite rotation,
means for applying energy to rotate the tripping plate in the first direction to a latching position, thereby storing energy in the trip spring means and causing the abutting means to disengage the drive arm actuator and allow its movement to the closed switch position,
a latch operable to latch the tripping plate in said latching position, and
means to release the latch to allow the tripping plate to rotate in said opposite direction.

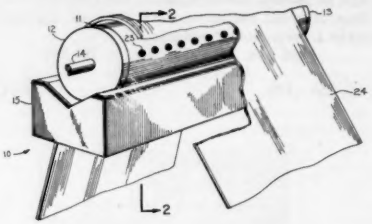
3,845,434

TENSION SENSING APPARATUS

James M. Carter, Minnetonka, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 31, 1973, Ser. No. 411,499
Int. Cl. H01f 21/06
U.S. Cl. 336—30 10 Claims

1. Sensing apparatus for sensing the tension of a strip, comprising, in combination: resilient means having a substantially rounded wall portion formed about an axis to form a cavity in said resilient means; fluid conduit means in fluid communication with said cavity, said strip being positioned outside of said resilient means and at least partially looped about said axis in spaced relation to said wall portion; fluid aperture means in said wall portion providing fluid communication between said cavity and the region between the looped portion of said strip and said wall portion, said wall portion being sufficiently resilient so as to deform when the force against the outside surface of said wall portion changes; and sensor means mounted to said resilient means for sensing the deformation of said wall portion, whereby upon change in tension in said strip a corresponding change occurs in the force imposed on fluid



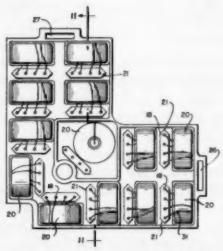
in said region by said strip to correspondingly change the force against the outside surface of said wall portion.

3,845,435

LOADING COIL PACKAGING ARRANGEMENT

Thomas Georgopulos, Chicago, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Jan. 2, 1974, Ser. No. 430,271
Int. Cl. H01f 15/02
U.S. Cl. 336—65 6 Claims



1. A coil tray assembly comprising, in combination: a coil tray molded of plastic material and having a plurality of spaced and oriented semi-circular shaped cavities therein for receiving loading coils and a plurality of holes adjacent each of said cavities for receiving therethrough the terminal pins of a terminal block, a terminal block having a base supporting a plurality of terminal pins such that said terminal pins extended from each of the opposite sides thereof, a plurality of loading coils having the ends of the windings thereon coupled with said terminal pins on one side of said base of said terminal block, said loading coils being positioned within said cavities in said coil tray and said terminal pins being extended through said plurality of holes adjacent said cavities so as to project from the bottom of said coil tray, and means hermetically sealing and positionally fixing said loading coils and said terminal blocks in said coil tray.

3,845,436

POWER TRANSFORMER HAVING SHIELDS FOR SHAPING THE ELECTRIC FIELD IN THE MAJOR INSULATION SPACES

Harral T. Robin, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

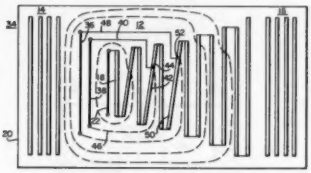
Filed Dec. 19, 1973, Ser. No. 426,390
Int. Cl. H01f 15/04
U.S. Cl. 336—84 1 Claim

1. A shell-form power transformer comprising:
a shell-form magnetic core;

a primary winding structure and a secondary winding structure inductively coupled to said magnetic core, said primary winding structure including a plurality of substantially rectangular coil sections disposed at different axial positions, with the coil section closest to said secondary winding structure having a smaller number of turns than the other coil sections;

a non-magnetic static plate positioned adjacent to the coil section of the primary winding structure which has the smaller number of turns;

a first non-magnetic, electrical conducting shield positioned



substantially parallel to said static plate and between said static plate and said secondary winding structure, said shield having a larger outside dimension than said static plate; and

a second non-magnetic, electrical conducting shield positioned substantially parallel to said first shield and between said first electrical conducting shield and said secondary winding structure, said second shield having a larger outside dimension than said first shield, with said first and second shields being electrically connected to potentials within the primary winding structure.

3,845,437

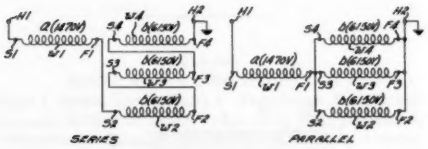
SERIES-MULTIPLE TRANSFORMER HAVING NON-INTEGER SERIES-PARALLEL VOLTAGE RATIO

Ernest A. Goodman, Pittsburgh, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 17, 1973, Ser. No. 361,257

Int. Cl. H01f 21/00

U.S. Cl. 336—147 **7 Claims**



1. A dual-voltage multi-winding transformer having a secondary winding and a primary winding comprising a plurality of untapped series-multiple primary winding sections of equal voltage rating and an untapped common primary winding section, and means for alternately connecting said series-multiple primary winding sections in series or parallel, said common primary winding section being in series with said series-multiple winding sections in both the series and the parallel connection thereof, the higher primary voltage rating of said transformer when said series-multiple primary winding sections are connected in series being a non-integer multiple of the lower primary voltage rating when said series-multiple winding sections are connected in parallel.

3,845,438

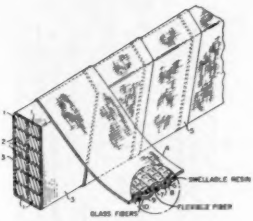
TAPE INSULATED CONDUCTOR

Morris A. Mendelsohn, Pittsburgh, and James D. B. Smith, Turtle Creek, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 210,878, Dec. 22, 1971, Pat. No. 3,759,734. This application Apr. 17, 1973, Ser. No. 351,918

Int. Cl. H01j 27/28

U.S. Cl. 336—209 **24 Claims**



1. An electrical article comprising

(1). a conductor;

(2). a rough-textured tape wrapped around said conductor and overlapped about ⅛ to about ½ inch, said rough-textured tape comprising a woven ribbon having glass fibers in the fill direction and flexible, thermally-stable fibers having an elongation of at least 2 percent in the warp direction, said ribbon being coated with a dry swellable resin composition cured beyond the B-stage; and

(3). a cured solventless resin under said tape.

3,845,439

METHOD OF MANUFACTURING FUSES

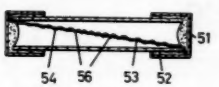
Gerardus J. Deelman, Eindhoven, Netherlands, assignor to Olvis Smeltzekeringen Fabriek N.V., Utrecht, Netherlands

Filed Sept. 15, 1971, Ser. No. 180,786

Claims priority, application Netherlands, Sept. 15, 1970, 7013620

Int. Cl. H01h 85/04

U.S. Cl. 337—291 **13 Claims**



1. A fuse for use at current values of one ampere and less comprising a tubular insulating casing, conductive terminal means mounted on each end of said casing and a fuse element mounted in said casing between said conductive terminal means, said fuse element including an electrically non-conductive, heat-insulating and heat-resistive wire core of fibres rigidified with set thermosetting material, wherein at least one current conductor of extremely fine wire is wound around said core.

3,845,440

TIME DELAY RELAY

Eugene A. Hunter, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 4, 1973, Ser. No. 421,552

Int. Cl. H01h 37/62

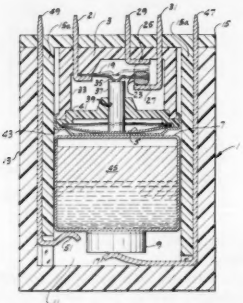
U.S. Cl. 337—341 **10 Claims**

1. A time delay relay comprising:

a set of electrical contacts movable between circuitmaking and circuit-breaking positions;

thermally responsive means for actuating said contacts to move them from one to the other position at a predetermined temperature;

thermal storage means in heat exchange relationship with the thermally responsive actuating means, said storage means comprising a body of material which will change from a first to a second physical state at a temperature intermediate that of the ambient of the relay and the predetermined temperature; and



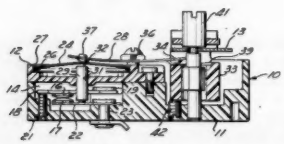
heatable means in heat exchange relationship with said thermal storage means adapted to effect a transfer of heat therebetween and cause said material to change states whereby the transfer of heat between said heatable means and the thermally responsive means is delayed and the period of time required for the thermally responsive means to reach the predetermined temperature is extended.

3,845,441

WIDE TEMPERATURE RANGE ADJUSTABLE DISC THERMOSTAT

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Aug. 14, 1972, Ser. No. 280,269
Int. Cl. H01h *37/12*
U.S. Cl. 337—347 **14 Claims**



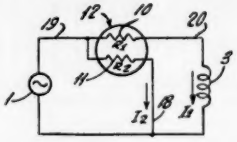
1. An adjustable thermostat comprising a body assembly, switch means on said body assembly, a smoothly dished bimetallic snap disc mounted at its periphery on said body assembly the central portion of which moves with snap action between two positions of stability in response to changes in the temperature of said disc, said disc having a central zone which is relatively flat and a generally conical annular zone extending from said central zone to the periphery of said disc, said disc operating said switch means with snap action as said disc snaps between said positions, and adjustable spring means applying an adjustable spring force to said disc in all positions of said disc biasing said disc toward one of said positions, said spring means being operable to adjust the operating temperature of said disc through wide ranges of temperature without significantly changing the differential temperature of said thermostat.

3,845,442

AUTOMATIC DEGAUSSING DEVICE

Osamu Ihaya, Kameoka; Munehiro Ito, Kyoto; Tetsuo Hayashi, Takatsuki, and Shoichi Fujimoto, Kameoka, all of Japan, assignors to Nichicon Capacitor Ltd., Kyoto, Japan

Division of Ser. No. 112,471, Feb. 3, 1971, abandoned, which is a division of Ser. No. 773,427, Nov. 5, 1968, abandoned. This application Mar. 13, 1973, Ser. No. 340,885
Int. Cl. H01c *7/04*
U.S. Cl. 338—23 **1 Claim**



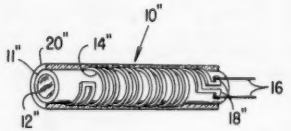
1. A thermister having positive temperature characteristics comprising at least one piece of resistive material having a positive temperature characteristic and a plurality of electrodes secured to said material to provide a current control portion and a heat generating portion, said resistive material having a pair of opposing surfaces with a layer of conductive material on one surface and at least two conductive layers on the other surface, the last said layers being spaced one from the other, and said electrodes being secured to said layers, one of said two conductive layers on said other surface at least partially surrounding the other of the last said layers.

3,845,443

THIN FILM RESISTANCE THERMOMETER

Edward W. Fisher, Alliance, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Continuation of Ser. No. 262,545, June 14, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 415,222
Int. Cl. H01c *7/04*
U.S. Cl. 338—25 **9 Claims**

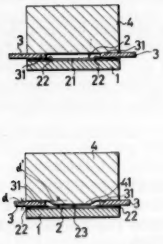


1. A resistance thermometer comprising a ceramic member having a smooth surface forming a rigid support substrate, an alumina glass precoat welded to and completely covering said smooth surface, a narrow thin-film of metal arranged in serpantine configuration welded to said alumina glass precoat and an alumina glass topcoat completely covering and welded to said glass precoat and said metal film whereby said metal film is hermatically sealed within said glass precoat and topcoat.

3,845,444
GALVANO-MAGNETRO EFFECT DEVICE

Noboru Masuda, Saitama; Yu Nishino, Yokohama, and Hisashi Takiguchi, Tokyo, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed June 11, 1973, Ser. No. 368,623
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 9 Claims



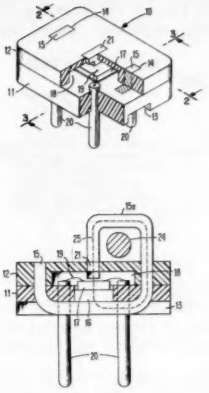
1. A galvano-magneto effect device comprising
a. a galvano-magneto effect element comprising a thin semiconductor layer made of a magnetism sensing semiconductor material,
b. a substrate, said semiconductor layer being positioned thereon wherein the relationship of the thickness of said semiconductor layer and the substrate is such that the thickness of the semiconductor layer is greater than the range of the thickness error of the substrate when the thickness of the semiconductor layer is controlled by controlling the total thickness of the semiconductor layer and the substrate; and
c. a cover plate made of ferrite which is bonded to said galvano-magneto effect element so that said cover plate covers said galvano-magneto effect element and has a thickness such that the magnetic permeability is saturated in accordance with variation of the thickness, wherein said galvano-magneto effect element is interpositioned between said substrate and said cover plate.

3,845,445
MODULAR HALL EFFECT DEVICE

Roland J. Braun, Vestal; Harry C. Kuntzleman, Newark Valley, and Herbert E. Meier, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,203
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H 11 Claims

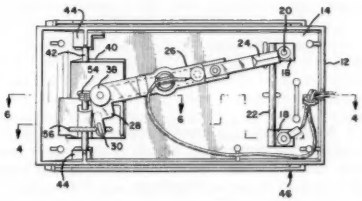
1. A Hall effect device comprising:
a housing of non-magnetic material having a cavity therein;
a carrier plate insert member of magnetic material positioned adjacent to said cavity;
a Hall semiconductor chip mounted on said carrier plate and extending into said cavity;
a second insert member of magnetic material connecting one outside surface of the housing with said cavity, said second member extending into the cavity in alignment with said chip but spaced therefrom by an air gap; and
a third insert member of magnetic material connecting said carrier plate with said one outside surface of the housing, said carrier plate and second and third members providing in conjunction with an external permanent magnet a closed magnetic flux path with a total effective magnetic air gap of only slightly more than the thickness of said chip.



3,845,446
FOOT OPERATED RHEOSTAT

Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055

Filed June 6, 1973, Ser. No. 367,536
Int. Cl. H01c 5/02
U.S. Cl. 338—153 5 Claims

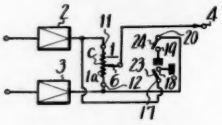


1. A variable resistance device comprising,
a flat rectangular casing,
an elongated resistance element within the casing extending in a predetermined plane,
an insulated arm within the casing pivotally mounted for movements parallel to said plane,
a conductive element on said arm for movements therewith and in contact with the resistance element,
a foot-operated control member overlying the casing and mounted thereon for pivotal movements transverse to said plane toward and from the casing,
means operated by the control member in its movements for rotating the arm to sweep the conductive element along the resistance element,
the foot-operated member comprising a plate element having a depressed portion forming a groove therein, and a shaft extending along the bottom of the groove and supported at its ends by the casing for pivotably mounting the plate to the casing.

3,845,447
VARIABLE RESISTOR

Takechika Ashiya, Kawasaki; Masaru Nagami, Yokohama, and Yoshimi Watanabe, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 19, 1973, Ser. No. 408,105
Claims priority, application Japan, Oct. 24, 1972, 47-122924
Int. Cl. H01c 9/08
U.S. Cl. 338—200 **7 Claims**

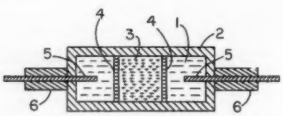


1. A variable resistor comprising:
a. a resistor element having first and second terminals;
b. a conductive slide means mounted for slide contact with said resistor element and said first and second terminals; and
c. switch means controlled by the position of said slide means and operative to ground one of said first and second terminals of said resistor element when said slide means engages the other one of said first and second terminals of said resistor element.

3,845,448
HIGH RESISTIVITY LIQUID/SOLID RESISTOR

Albert F. Hadermann, Ijamsville, Md.; Paul F. Waters, Washington, D.C., and Jung Woo Woo, Arlington, Va., assignors to Applied Physical Chemistry Inc., Ijamsville, Md.

Filed June 1, 1973, Ser. No. 366,009
Int. Cl. H01c 11/00
U.S. Cl. 338—222 **3 Claims**



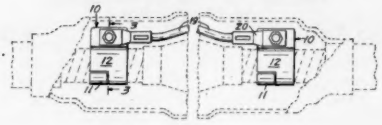
1. A resistor having a specific restivity of at least 5×10^9 ohm centimeters comprising: a body of electrically insulating material having first and second end portions, and containing a high resistivity liquid-solid mixture which is stable in time, wherein said liquid-solid resistance comprises a polar or non-polar liquid selected from the group consisting of isopropanol, ligroin, cyclohexane, octane, dioxane, ethanol, 1 hexanol, acetone, 2 pentanone and amyl acetate, and a powdered solid dielectric having a particle size of about 0.1 micron selected from the group consisting of alumina, silica, powdered glass, quartz, sulfur, titanium oxide, barium sulfate and organic polymers, first and second terminals formed on respective opposite ends of said body, each including a lead wire secured to a respective end of said body and extending into the inner portion containing the polar or non-polar liquid-powdered solid dielectric mixture.

3,845,449
CABLE SHIELD CLAMP

Ronald D. Taylor, Blaine, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 2, 1973, Ser. No. 384,932
Int. Cl. H01r 3/06
U.S. Ci. 339—14 L **7 Claims**

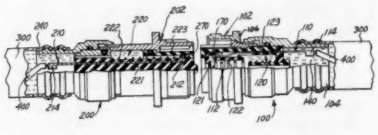
1. A clamp comprising a pair of rigidly resilient generally L-shaped electrically conductive metal plates each formed to provide a substantially flat centrally perforate end section, a curved central section of the same width as said end section, and a curved extension of slightly less than one-half of said width, the curved portions together extending over significantly more than one-half but less than three-fourths of a complete circle, the perforate end section being radially extended from said circle, the two pieces fitting together in face-to-face relationship with the curved portions terminally unconnected to define a circular clamping area.



3,845,450
UNDERWATER ELECTRICAL CONNECTOR

Judson C. Cole, Sidney, and James R. Hall, Bainbridge, both of N.Y., assignors to The Bendix Corporation, Bendix Center, Southfield, Mich.

Filed Dec. 26, 1972, Ser. No. 318,342
Int. Cl. H01r 33/36, 13/52
U.S. Cl. 339—42 **6 Claims**



1. An underwater electrical connector and cable assembly comprising:
a plug housing having a forward mating end, a rear conduit receiving end and a central axis from said forward end to said rear end;
a first plurality of electrical contacts having mating ends and conductor receiving ends;
means for mounting said first plurality of electrical contacts in said plug housing and in spaced relationship around said plug housing central axis so that the mating end of said contacts are at the mating end of said housing;
sealing means for establishing a fluid-tight seal at the mating end of said plug housing, said sealing means including a forwardly biased portion that covers said contacts and maintains a fluid-tight seal when said contacts are covered and is rearwardly movable to expose said contacts, said sealing means defining with said plug housing a cavity within which at least a portion of the mating ends of said contacts mounted in said plug are disposed, said cavity communicating with the rear conduit receiving end of said plug housing;
a first water-tight resiliently deformable, conduit connected at one end to the conduit receiving end of said plug housing, said conduit including therein a plurality of electrical conductors, each having one end connected to a respective conductor receiving end of said contact mounted in said plug;
an electrically nonconducting fluid filling the remaining space in said conduit and said plug cavity whereby the mating ends of said contacts mounted in said plug are substantially surrounded by said nonconducting fluid, said forward mating end of said plug adapted to receive a receptacle having contacts within said plug housing so that said contacts mounted in said plug are in contact

with the nonconducting fluid in said plug cavity upon mating of said plug with a receptacle;

a receptacle housing having a forward mating end, a rear conduit receiving end and a central axis from said forward end to said rear end;

a second plurality of electrical contacts having mating ends and conductor receiving ends;

means for mounting said second plurality electrical contacts in said receptacle housing and in spaced relationship around said receptacle housing central axis so that the mating end of said contacts are at the mating end of said receptacle housing and said contacts mounted in said receptacle engage said contacts mounted in said plug upon mating of said plug and receptacle;

sealing means for establishing a fluid-tight seal at the mating end of said receptacle housing, said sealing means including a forwardly biased portion that covers said contacts mounted in said receptacle and maintains a fluid-tight seal when said contacts mounted in said receptacle are covered and is rearwardly movable to expose said contacts mounted in said receptacle upon mating, said receptacle covering means defining with said receptacle housing a cavity within which at least a portion of the mating ends of said contacts mounted in said receptacle are disposed, said cavity communicating with the rear conduit receiving portion of said receptacle housing;

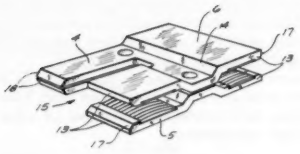
the other end of said first water-tight, resiliently deformable conduit connected to the conduit receiving end of said receptacle housing, said nonconducting fluid filling said receptacle cavity also, whereby at least a portion of the mating ends of said contacts mounted in said receptacle are surrounded by said nonconducting fluid and whereby said nonconducting fluid in said conduit communicates with said plug cavity and said receptacle housing.

3,845,451

ELECTRICAL COUPLING ARRANGEMENT

Rudolf Neidecker, Basel, Switzerland, assignor to Multi-Contact AG, Basel, Switzerland

Filed Feb. 26, 1973, Ser. No. 335,715
Int. Cl. H01r *25/00*
U.S. Cl. 339—49 R **8 Claims**



1. An electrical coupling arrangement comprising, in combination with a pair of conductors,

a pair of like coupling elements each having a front side formed with a plug and next to said plug with a first jack, and a back side formed with a second jack, whereby said front sides of said elements are mutually matable with each of said plugs engaged in the first jack of the other element; and

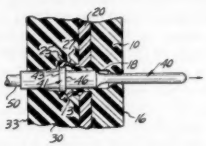
a respective second plug on each of said conductors, each of said second plugs being engageable in a respective one of said second jacks, said elements being each formed of a pair of metallic plates having a central region between said sides connect the plates together, said plates being formed at said front side with a cleft and being spread apart to one side of said cleft to form said first jack, said plates being spread apart at said back side to form said second jack.

3,845,452

REAR RELEASE CONTACT RETENTION ASSEMBLY

Raymond J. Eifler, Farmington, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 26, 1972, Ser. No. 318,343
Int. Cl. H01r *13/42*
U.S. Cl. 339—59 R **8 Claims**



1. An electrical connector unit comprising:

an insulator member having a plurality of bores therethrough extending from a forward face to a rearward face;

a body having a forward face and a rearward face mounted with its forward face against the rearward face of the insulator member, said body having a plurality of passages therethrough axially aligned with said bores of said insulator member, said bores and said passages each adapted to receive an electrical contact member which is insertable from the rear of said body and each contact having an enlarged section defining a rearwardly facing shoulder and a forwardly facing shoulder thereon; and

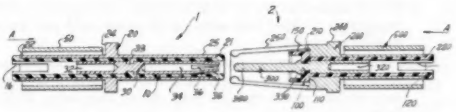
a plurality of hook shaped retention members extending rearwardly from the rear face of said body and disposed in spaced relationship around the periphery of each of said passages, said retention members being integral with said body and having a forwardly facing shoulder that partially blocks the path of a passage in said body and terminates in a rear free end, each of said retention members being resiliently and radially deflectable to permit said enlarged contact sections to pass into said passages upon forward insertion of the contact member into the passage and bore, said hook shaped contact retention members contracting behind the rearwardly facing shoulder on the contact member to limit rearward movement thereof in the passage and bore of said body and member respectively, said retention members being substantially rigid in the axial direction when in their contracted position so as to provide a positive stop against rearward movement of the respective contact member.

3,845,453

SNAP-IN CONTACT ASSEMBLY FOR PLUG AND JACK TYPE CONNECTORS

Valentine J. Hemmer, Sidney, N.Y., assignor to The Bendix Corporation, Bendix Center, Southfield, Mich.

Filed Feb. 27, 1973, Ser. No. 336,307
Int. Cl. H01r *17/06*
U.S. Cl. 339—59 R **7 Claims**



1. In combination with a coaxial cable connector of the type having; a cylindrical housing that includes a central passage, a forward mating portion, and a rear portion; an electrical contact having a wire receiving end, an opposite mating end, and a recess in the outside of said contact; and an insulator mounted in said housing central passage and disposed to

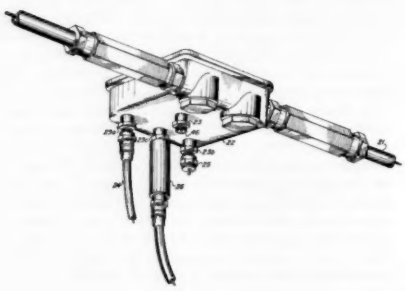
retain said contact within but electrically insulated from said housing, the improvement wherein the insulator comprises:

a sleeve comprised of electrically nonconducting material surrounding the entire electrical contact, said sleeve having a forward end portion, a rear end portion, an axial slot in said rear end portion so that said rear end portion of said sleeve is radially compressible, a first rearwardly facing shoulder on said front portion of said sleeve that engages the front end of said housing, a second forwardly facing shoulder on said rear end that engages the rear end of said housing, so that the engagement of said shoulders with said ends of said housing prevents axial movement of said sleeve and an internal projection in said sleeve that extends into the recess in said contact to prevent axial movement of said contact mounted within said sleeve whereby said sleeve and said contact may be removed from the front of said housing by radially compressing said rear portion of said sleeve so that said forwardly facing shoulder on said rear portion of said sleeve disengages the rear end of said housing to permit removal of said sleeve from the forward mating portion of said housing.

3,845,454
TAMPER-RESISTANT CABLE TERMINATOR

Robert D. Hayward, Phoenix; James E. Chapman, Glendale, and Stanley R. Ray, Phoenix, all of Ariz., assignors to Gilbert Engineering Company Inc.

Filed Oct. 20, 1972, Ser. No. 299,453
Int. Cl. H01r *13/54*
U.S. Cl. 339—85 **1 Claim**



1. In a tamper-resistant cable terminator assembly specially adapted for use in a CATV cable transmission system, said system including

a cable for transmitting electrical signals, and

a fixed cable terminal comprising a first connector member of a rotationally engageable male-female connector member pair,

said cable terminator assembly including

a second connector member of said pair having means for engaging a locking tool adapted to rotate said pair into locking engagement,

an outer shield member coaxially rotatable about said connector pair member, shaped and dimensioned to receive and enclose said connector pair therewithin when lockingly engaged, and

means for retaining said second connector member inside said outer shield member,

the improvement whereby the tamper-resistance of said terminator assembly is increased, said improvement comprising:

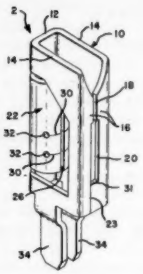
a. means carried by said second connector member forming a cylindrical extension thereof and having at least one locking-tool-engaging recess formed in the inner wall thereof and extending radially outwardly; and

b. means defining a locking tool access port in said outer shield member communicating with the interior of the cylindrical extension of said second connector member, the diameter of said port being no larger than the inside diameter of said cylindrical extension.

3,845,455
TUBULAR CONDUCTOR-IN-SLOT CONNECTING DEVICE

John Robert Shoemaker, Walkerton, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 12, 1973, Ser. No. 405,970
Int. Cl. H01r *9/06*
U.S. Cl. 339—97 **8 Claims**



1. In a stamped and formed connecting device comprising a first formed tubular member having a first axially extending open seam, said first seam serving as a first conductor-receiving slot having opposed edges whereby upon movement of a conductor laterally of its axis and into said first slot, said edges engage said conductor, the improvement to said device comprising:

a second tubular member having a second axially extending open seam which is in alignment with said first open seam in said tubular member, said second tubular member and said first tubular member having a common bight portion, and said second tubular member having side portions which are struck from side portions of said first tubular member, said second tubular member, being contained within said tubular member each said side portion of each said tubular member being bent towards its opposing side portion at its free end, said free ends thus forming said conductor receiving slots, whereby

upon movement of a conductor laterally of its axis into said first open seam and said second open seam from one end of said device, said conductor is engaged by edge portions of both of said open seams.

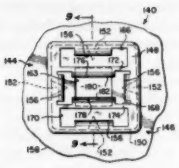
3,845,456
CLINCHABLE TERMINALS

Leonard H. Michaels, Warrenville, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Continuation-in-part of Ser. No. 184,361, Sept. 28, 1971, Pat. No. 3,768,062. This application July 17, 1972, Ser. No. 272,441The portion of the term of this patent subsequent to Oct. 23, 1990, has been disclaimed.
Int. Cl. H01r *9/08, 15/12*; H05k *01/10*
U.S. Cl. 339—97 R **15 Claims**

1. A terminal for interconnecting a thin circuit device and a projecting male terminal, said terminal comprising a body formed of conductive material and having a generally planar portion, a plurality of tangs extending from said body in a direction generally normal to said planar portion and adapted to be inserted through the thin circuit device from one side and clinched against the opposite side thereof, a series of apertures in said generally planar body portion defining

spaced arms each integral at both ends with said body, and interfacing contact segments on said arms spaced apart from



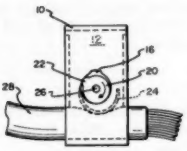
one another and adapted to receive the projecting male terminal with an interference fit.

3,845,457

CABLE HOLDING SPRING CLAMP

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 1, 1973, Ser. No. 411,953
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R **6 Claims**



1. A cable holding spring clamp comprising
a housing having a cable receiving aperture disposed therein;
an integrally formed cam and spring clamp element, said spring clamp extending spirally outward from said cam;
means for mounting said cam and spring clamp element transversely within said cable receiving aperture such that it is rotatable about a longitudinal axis;
means for rotating said cam and spring clamp element within said cable receiving aperture to thereby compress said spring clamp against said cable with a preselected force; and
means for locking said cam and spring clamp element in rotation to thereby lock said cable between said spring clamp and said housing.

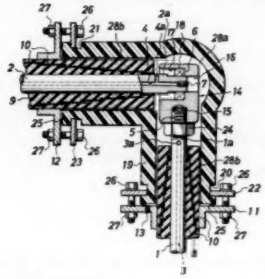
3,845,458

BUS-BAR CONNECTION APPARATUS FOR AN ELECTRICAL MACHINERY OF METAL CLAD TYPE

Hitoshi Himi, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 389,789
Claims priority, application Japan, Aug. 22, 1972, 47-83996
Int. Cl. H01r *3/02*; **H02g** *5/00*
U.S. Cl. 339—117 R **9 Claims**

1. A bus bar connecting arrangement comprising:
a. a first bus bar;
b. a second bus bar;
c. an elongated, tubular member of solid insulating material enveloping each bus bar, but leaving a longitudinally terminal part of said bus bar bare,
1. one of said bus bars being formed with a longitudinal passageway extending therethrough and terminating in an opening in said bare part;
d. a connector of electrically conductive material connecting said bare parts of said first and second bus bars;
e. a casing having an inner face defining a central cavity and two passages leading from said cavity toward respective open ends of said passages,
1. said connector being positioned in said cavity and spaced from said inner face,
2. respective portions of said bus bars enveloped by said tubular members extending inward of said casing through said open ends, said tubular members being



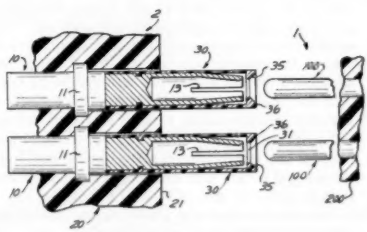
spaced transversely from said inner face in the respective passages;
f. fastening means for fastening each of said tubular members to said casing outside said cavity and said passages;
g. sealing means hermetically sealing said cavity and said passages; and
h. an insulating fluid in said cavity and said passages separating said inner face from said tubular members, said bare parts, and said connector.

3,845,459

DIELECTRIC SLEEVE FOR ELECTRICALLY AND MECHANICALLY PROTECTING EXPOSED FEMALE CONTACTS OF AN ELECTRICAL CONNECTOR

Richard W. Normann, Otego, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

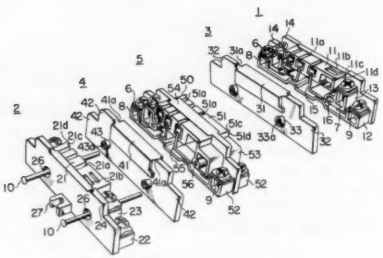
Filed Feb. 27, 1973, Ser. No. 336,309
Int. Cl. H01r *19/28*
U.S. Cl. 339—191 R **3 Claims**



1. In combination with an electrical connector element of the type having an insert and a plurality of female contacts mounted therein with the mating end of the female contact extending from one face of said insert, each of said female contacts including an enlarged portion and a forward portion that includes the mating end and an annular groove having a rearwardly facing shoulder in the forward portion of the contact, the improvement comprising:
a plurality of sleeves comprised of electrically insulating material, each mounted on the forward portion of one of said female contacts and completely surrounding said mating portion of said contacts, each of said sleeves

including an internal projection having a forwardly facing shoulder that mates with the annular groove in said female contact and engages the rearwardly facing shoulder of said groove to secure the dielectric sleeve to the forward portion of said female contact and wherein each of said sleeves includes a forward male contact receiving end portion that tapers radially inward with respect to the axis of said sleeve from free end so as to provide a means for guiding a male contact into said sleeve and said mating portion of said female contact.

3,845,460
RELAY SOCKET
Teizo Fujita, and Masao Kikuchi, both of Osaka, Japan, assignors to Izumi Denki Company Limited, Osaka, Japan
Filed Apr. 20, 1973, Ser. No. 353,023
Claims priority, application Japan, Apr. 21, 1972, 47-40691
Int. Cl. H01r *33/76*
U.S. Cl. 339—192 R **1 Claim**



1. A relay socket assembly for electrically connecting the terminals of a quadri-pole relay plug to external lead wires comprising:

first and second socket units having respective configurations which are substantially symmetrical with each other, each of said first and second socket units including a front open side, a back wall side, a center land portion formed to provide a plurality of terminal-receiving slots which are open at an upper surface of said center land portion and which are adapted to receive the terminals of a relay plug, at least one lead-out terminal mounting portion formed at each of the opposite sides of said center land portion and adapted to mount a lead-out terminal to be connected with one of the external lead wires, and a cavity portion spatially communicating each of said terminal-receiving slots with the corresponding lead-out terminal mounting portion, said cavity portion being open at said front open side of said socket unit and being closed at its back side by said back wall side of said socket unit;

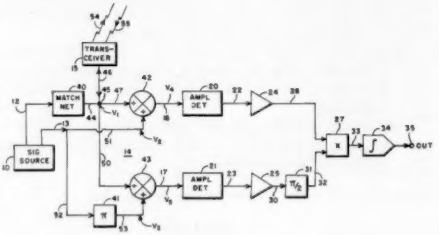
first and second separator plates having substantially the same configurations as one another;

a third socket unit which has an intermediate wall portion, said third socket unit having first and second opposing open sides separated by said intermediate wall portion and having respective configurations which are substantially symmetrical with each other, a further center land portion provided on each of the opposite sides of said intermediate wall portion and formed with a plurality of terminal-receiving slots which are open at an upper surface of said further center land portion and which are adapted to receive the terminals of the relay plug, at least one lead-out terminal mounting portion formed at each of the opposite sides of each of said further center land portions and adapted to mount a lead-out terminal to be connected with another one of the external lead wires, and a pair of further cavity portions formed respectively on the opposite sides of said intermediate wall portion and communicating each of said terminal-receiving slots of said third socket unit with the corresponding lead-out terminal mounting portion of said third socket unit, each of said further cavity portions being open at the corresponding open side of said third socket unit and being closed at its back side by said intermediate wall portion of said third socket unit;

a plurality of metallic connection fittings each having one end formed to provide one of said lead-out terminals and having its other end fitted with a plug receiving terminal for electrical connection with the terminal of the relay plug;

said first, second and third socket units, said first and second separator plates, and said metallic connection fittings being assembled into said relay socket assembly with said front open sides of said first and second socket units being disposed in opposing relation to said first and second open sides of said third socket unit respectively, and with said first and second separator plates being interposed between said first and third socket units and between said second and third socket units, respectively, each of said metallic connection fittings being mounted in a corresponding one of said cavity portions of said first, second, and third socket units with its plug receiving terminal being disposed in a corresponding one of said terminal-receiving slots and with its lead-out terminal being disposed on a corresponding one of said lead-out terminal mounting portions.

3,845,461
INTRUSION DETECTION SYSTEM
Donald S. Foreman, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 25, 1973, Ser. No. 373,105
Int. Cl. G08b *13/16*
U.S. Cl. 340—1 R **6 Claims**



1. Apparatus for indicating the presence in a monitored space of a body having a component of movement toward or away from the indicating apparatus comprising, in combination:

a single transducer operable to transmit radiated energy into a space and to receive said radiated energy when reflected from bodies in said space;

a source of radiated energy;

means interconnecting said source and said transducer so that energy from said source may be transmitted into said space and may also combine with reflected energy from said space to comprise a first signal having a first component determined by said source and a second component determined by the movement of any reflecting body in the space;

detecting means connected to receive said first signal for giving a pair of further signals, in phase quadrature, in response to said component of movement of said body in said space, the phase relation therebetween reversing with reversal in the sense of said component; and

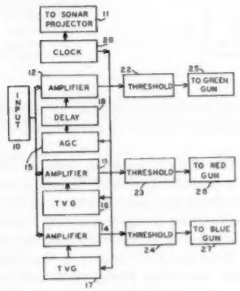
means for deriving from said further signal an output which reverses with reversal of the phase relation therebetween.

3,845,462

SONAR SIGNAL PROCESSING AND DISPLAY TECHNIQUE

J. E. Blue, Orlando, Fla., and J. G. Pruitt, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 24, 1972, Ser. No. 274,545
Int. Cl. G01s 7/62
U.S. Cl. 340—3 R **3 Claims**



1. A three color display system for sonar systems, comprising;

a. a sonar signal projector and receiver system including first, second, and third guns in a three gun color tube;

b. first, second, and third threshold circuits in said receiver individually controlling voltage applied to said first, second and third guns in said colored tube;

c. an input circuit adapted to receive a sonar signal echo return;

d. first, second, and third amplifier circuits coupled to receive a signal from said input circuit and to said first, second, and third threshold circuits respectively, to provide an amplified signal from said input to said threshold circuits;

e. a clock circuit in said sonar signal projector;

f. an automatic gain control circuit, and a time delay circuit coupled to receive a signal from said clock circuit and coupled to said first amplifier circuit for controlling the output of said first amplifier;

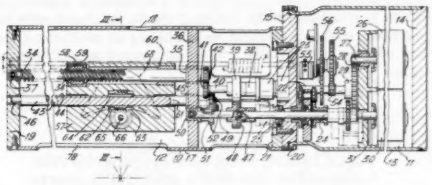
g. a first time varying gain circuit coupled to said clock circuit and to said second amplifier, a second time varying gain circuit coupled to said clock circuit and to said third amplifier, said clock circuit generating signals to actuate said automatic gain control circuit and said first and second time variable gain circuits, said first amplifier circuit generating a signal thru said first threshold circuit to produce a display on the face of said tube from said first color gun including a target, a target shadow area and a background scatter signal, said second and third amplifiers generating signals to produce selected target signals and background scatter signals from said second and third guns.

3,845,463

ULTRASONIC TESTING APPARATUS

Arthur Edwards Timbs, Flixton, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 15, 1973, Ser. No. 323,967
Claims priority, application Great Britain, Jan. 27, 1972, 3879/72
Int. Cl. G01s 7/52
U.S. Cl. 340—5 R **4 Claims**



1. A scanning unit for an ultrasonic wave transmitting-/receiving head comprising:

a. a watertight compartment,

b. an elongate water-floodable structure attached to the watertight compartment,

c. drive means in the watertight compartment with drive shafts extending through the watertight compartment into the water-floodable structure,

d. a carriage movable along said structure by rotation of one of said drive shafts,

e. an ultrasonic wave transmitting receiving head on said carriage,

f. a swingable mounting for said head on said carriage, and

g. means coupling another of said drive shafts with said swingable mounting so that rotation of that drive shaft causes the head to swing on the carriage,

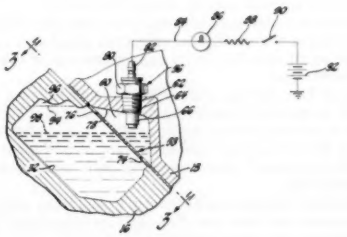
whereby said head can be scanned linearly along the unit and optionally swung predetermined amounts to transmit/receive waves in the compression mode or in the shear mode at various angles.

3,845,464

LOW COOLANT INDICATOR

Joachim H. Engel, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 23, 1973, Ser. No. 353,564
Int. Cl. G08b 21/00
U.S. Cl. 340—59 **2 Claims**



1. A coolant level indicating assembly for a vehicle with an engine having a front-mounted water pump and a water passage for cooling the engine comprising: wall means separating said water passage from a cavity formed in an upper, rearward portion of said engine which is remotely located from said front-mounted water pump; said separator wall having opening means therethrough including a lower portion adapted to

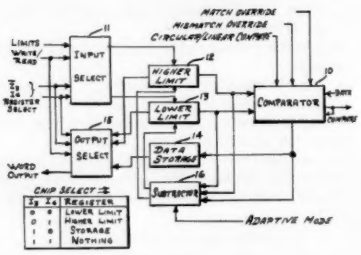
pass coolant between said water passage and said cavity in response to changes in the coolant level in the engine and an upper portion adapted to permit the discharge of air from said cavity as the coolant level therein increases; a temperature responsive sensor attached to said engine having a portion extending into an upper region of said cavity; said portion of the sensor including a variable resistance element in circuit with the vehicle electrical power source and being positioned in said cavity to be covered by coolant when there is a sufficient coolant volume in said engine; said variable resistance element being characterized by a substantial change in resistance between conditions when it is covered by coolant and when it is uncovered by coolant; means in circuit with said variable resistance element for indicating an insufficient coolant volume corresponding to an uncovered operative condition.

3,845,465

ASSOCIATIVE STORAGE APPARATUS FOR COMPARING BETWEEN SPECIFIED LIMITS

Charles L. Hosick, and Joseph A. Beek, both of Placentia, Calif., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Jan. 12, 1973, Ser. No. 323,152
Int. Cl. G11b 5/62
U.S. Cl. 340—146.2 **2 Claims**



1. An associative storage apparatus for comparing digital data to a set of specified limits comprising in combination:

a comparator unit to receive input data, said comparator unit to compare said input data with a set of specified limits, said input data comprising a plurality of words, said comparator unit comparing each word of said plurality of words with said set of specified limits,

an input select unit to receive said set of specified limits and write/read control signals, said input select unit passing said set of specified limits upon command of the write control signal,

a higher limit storage unit connected to said input select unit to receive the upper limit from said set of specified limits, said upper limit being applied to said comparator unit for comparison with each word of said input data, said comparator unit comparing each word with said upper limit

a lower limit storage unit connected to said input select unit to receive the lower limit from said set of specified limits, said lower limit being applied to said comparator unit for comparison with each word of said input data, said comparator unit comparing each word with said lower limit, a data storage register to receive the output of said comparator unit, said comparator unit comparing said input data to said upper limit and to said lower limit, said comparator unit providing an output when said input data is between said upper and lower limit, said output being stored in said data storage register, and

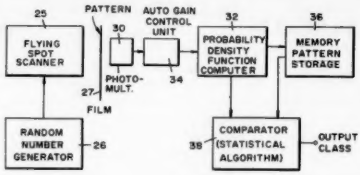
an output select unit to receive said output from said data storage unit, said output select unit passing said output of said data storage unit upon the command of the read control signal.

3,845,466

SYSTEM AND METHOD FOR CHARACTER RECOGNITION

Jung Pyo Hong, Santa Monica, Calif., assignor to California Institute of Technology, Pasedena, Calif.

Continuation-in-part of Ser. No. 90,584, Nov. 18, 1970, abandoned. This application July 31, 1972, Ser. No. 276,599
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 S **9 Claims**



1. A character recognition system for identifying substantially every character in a set of preselected characters comprising:

first means for storing for each type of character to be identified a probability density function, which is a function of the character and its intersections with uniformly distributed random straight scanning lines, each straight scanning line being sufficiently long to scan across the character from one end thereof to the other;

second means including flying spot scanning means for scanning a character to be recognized with a plurality of uniformly distributed random straight scanning lines, each straight scanning line being sufficiently long to scan across the entire character from one end thereof to the other, and for deriving on the basis of the intersections of said scanned character by said straight scanning lines a probability density function for said character; and

third means coupled to said first and second means for comparing the probability density function derived in said second means for said scanned character with the probability density functions stored in said first means and for substantially identifying the scanned character when its probability density function from said second means substantially matches any of the probability density functions in said first means.

3,845,467

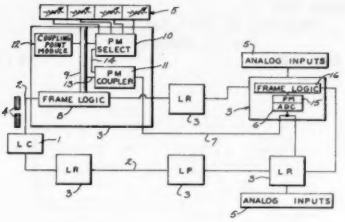
ANALOG SIGNAL TRANSMISSION SYSTEM FOR DIGITAL DATA COMMUNICATION SYSTEM

Gary F. Oman, Greendale; Lawrence J. Strojny, West Allis; Paul H. Froehling, Franklin, and Stuart R. Buchanan, Mequon, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,463
Int. Cl. H04q 5/00
U.S. Cl. 340—147 R **34 Claims**

1. In a data communication apparatus employing high speed digitally encoded information data for controlling a plurality of controlled stations connected by a communication loop to controller station, at least one of said stations including an analog source means, the improvement in the method of transmitting and converting analog information comprising a separate analog signal transmission means including an analog to digital signal converting means, each of said stations having an analog source means including coupling means connecting said transmission means to the source means, said coupling

means including a decoding means connected to said communication loop for selective activation to latch the source means to the transmission means, and interrupt means coupled to the



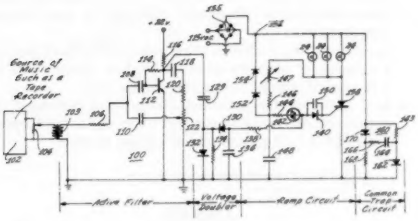
converting means and connected to the communication loop for transmitting of the converted analog signal over the communication loop.

3,845,468

DISPLAY SYSTEM FOR MUSICAL TONES

Robert M. Smith, 1443 Centinela Ave., Santa Monica, Calif. 90404

Filed Oct. 10, 1972, Ser. No. 296,068
Int. Cl. G08b *5/36*
U.S. Cl. 340—148 **21 Claims**



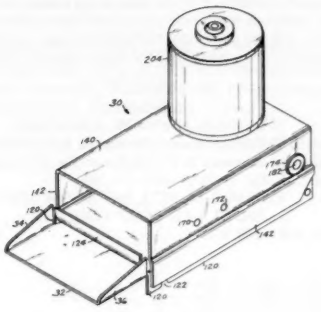
1. An electrical display panel assembly including: a base; a panel mounted on said base in an upright position to serve as a support member for the assembly; electrically energized illuminating means comprising a plurality of differently colored electric lights mounted on said panel; a first light diffusion screen mounted on said base in an upright position in generally spaced relationship with said panel to serve as a front member for the assembly; a second light diffusion screen mounted on said base between said panel and said first diffusion screen in generally spaced and parallel relationship with said panel and with said first diffusion screen; and electric circuit means including a plurality of electric channels respectively connected to the lights of different particular colors, with filter means included in each such channel to cause the respective channels to respond to electric signals corresponding to musical tones within different predetermined frequency ranges, so that the electric lights of different colors may be energized in response to tones in different frequency ranges, thereby to create harmonizing diffusion patterns on the exterior surface of the first light diffusing screen.

3,845,469

PAPER CURRENCY VALIDATOR

Larry R. Fishel, Dover, Ohio, and James R. Pescetto, Hot Springs, Ark., assignors to UMC Industries, Inc., New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,327
Int. Cl. H04q *1/18*
U.S. Cl. 340—149 A **22 Claims**



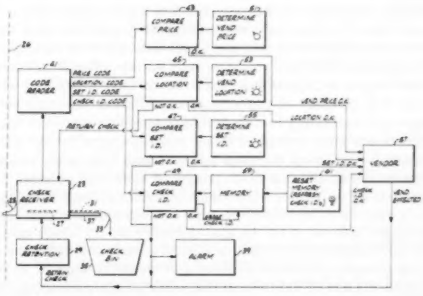
1. A validator which comprises a sensing element, means to provide relative movement between an authentic document and said sensing element to develop a signal having a given frequency, and a frequency-sensing circuit which has the essential elements thereof fixed in nature rather than adjustable in nature, whereby said frequency-sensing circuit has greater stability and is less expensive than a comparable frequency-sensing circuit which has the essential elements thereof adjustable in nature, said essential elements of said frequency-sensing circuit helping establish and maintain a predetermined center frequency for said frequency-sensing circuit, and said means having a speed-adjusting sub-circuit which permits the rate of said relative movement to be adjusted to cause said given frequency of said signal to be sufficiently close to said predetermined center frequency to enable said frequency-sensing circuit to respond to said signal.

3,845,470

CHECK-CONTROLLED VENDING

James T. Schuller, St. Louis, Mo., assignor to UMC Industries, Inc., New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,581
Int. Cl. H04q *51/00*
U.S. Cl. 340—149 A **19 Claims**



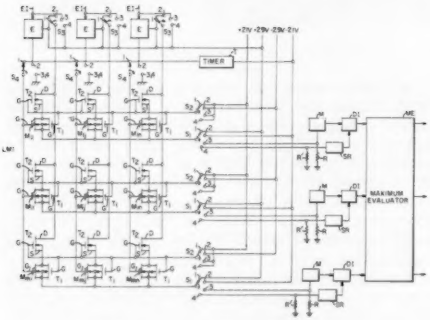
1. A vending system comprising a plurality of sets of checks, each of the sets having a plurality of checks each carrying a predetermined set identification code for identifying a respec-

tive one of the sets; and check-controlled vend apparatus comprising means for receiving one of said checks to effect a vend operation, means for reading the set identification code of a received check, set selection means for preselecting a set identification and selectively operable from a location accessible only to authorized personnel to permit a vend operation only in response to receiving a check carrying the preselected set identification code, means for comparing the read set identification code with the preselected set identification, vend means, controlled by the comparing means, for effecting a vend operation if the read set identification code compares correctly with the preselected set identification, and means for retaining the received check if a vend operation is effected.

3,845,471
CLASSIFICATION OF A SUBJECT

Heribert J. P. Reitboeck, and Thomas P. Brody, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 14, 1973, Ser. No. 350,272
Int. Cl. G11c *15/00*; G06g *7/19*
U.S. Cl. 340—149 R **11 Claims**

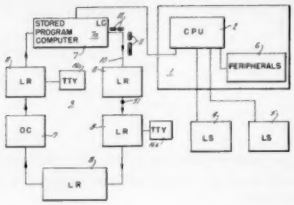


1. Apparatus for classifying a subject from a plurality of its characteristics or features, the said apparatus comprising a learning matrix including plurality of transistor means, electrically disposed in columns and rows, each transistor means having gate means, source means, and drain means, and also having means for retaining on said gate means a flat-band voltage derived from a potential impressed on said gate means, each said row having output means, means connecting the source and drain means of the transistor means of each row to its corresponding output means so that the drain currents for the transistor means of said last-named row are supplied in parallel to said output means, first impressing means, connected to the gate means of the transistor means of each row, for impressing on the respective gate means of said last-named transistor means of said last-named rows a set of comparison flat-band voltages, each voltage of said set corresponding to a comparison characteristic to be compared with one said plurality of characteristics, different flat-band voltages corresponding to different patterns of comparison characteristics being impressed on the respective gate means of the transistor means of different rows, second impressing means, connected to the transistor means of each said column, for impressing on the transistor means of each column, a voltage in comparison relationship with said comparison flat-band voltages impressed on the gate means of the transistor means of said last-named column, a voltage corresponding to one of said plurality of characteristics, and means connected to the output means of the rows of said columns for comparing, the drain currents conducted by the drain means of the transistor means of said different rows, with each other to compare the characteristics of said subject with the patterns of comparison characteristics in each row.

3,845,472
DATA COMMUNICATION SYSTEM EMPLOYING A SERIES LOOP

Stuart R. Buchanan, Mequon; Paul H. Froehling, Franklin; Gary F. Oman, Greendale, and Thomas W. Huebner, New Berlin, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,567
Int. Cl. H04q *9/00*
U.S. Cl. 340—163 **50 Claims**



1. A data communication loop system wherein a plurality of remote stations are coupled to a central control station by a serial transmission path means, each of said remote stations being adapted to receive multiple bit code signals and to transmit said signals to a succeeding station, each of said remote stations including a plurality of load means which are divided into functional groups defined as point modules, comprising

a frame code signal generator forming a part of said control station and adapted to generate a continuous series of time spaced data frames separated in time,

each of said frames having at least three bytes including an initial frame status and address byte including frame status bits and a subsequent plurality of loop remote station address bits,

a second multiple bit byte having acknowledgment bits and a subsequent plurality of point module address bits for selection of remote monitored means, and

a third multiple bit byte having a plurality of command bits and operating data bits for execution of selected operations of the load means within a point module.

3,845,473
PULSE SIGNAL TRANSMITTER AND RECEIVER

Kazumi Kawashima, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Dec. 7, 1972, Ser. No. 312,971
Claims priority, application Japan, Dec. 7, 1971, 46-99300; Dec. 30, 1971, 46-4573; Dec. 30, 1971, 46-4574; Dec. 30, 1971, 46-4575
Int. Cl. H04q *5/14*
U.S. Cl. 340—167 R **14 Claims**

1. A pulse signal transmitter comprising

a. means for manually selecting a desired code,

b. means for converting said selected code into a binary code,

c. means for storing said binary code,

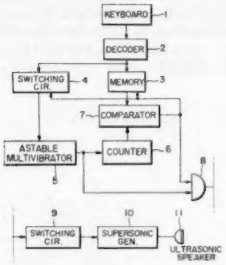
d. pulse generator means actuable in response to the code selection by said code selection means for producing a series of pulses,

e. counter means connected to count the pulses from said pulse generator means,

f. comparator means connected to said counter means and storing means for producing a coincidence signal when the content in said counter means coincides with that in said storing means,

g. means for inhibiting further output pulses of said pulse

generator means in response to said coincidence signal, and

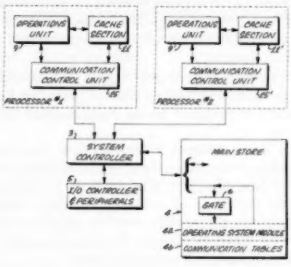


h. means for modulating and transmitting the pulses produced by said pulse generator means.

3,845,474
CACHE STORE CLEARING OPERATION FOR MULTIPROCESSOR MODE

Ronald Edwin Lange, Phoenix; John F. Couleur, Scottsdale, and Donald L. Pine, Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 5, 1973, Ser. No. 413,089
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **11 Claims**



1. A clearing apparatus for a cache store located in each processor of a multiprocessor data processing system, said clearing apparatus of each cache comprising:

addressable storage units one associated with each column of a set associative, multi-level, multi-column addressable tag directory to its related cache store and activated by alike address signals as its associated column, each storage unit when set storing full/empty status indicator signals of each level of its associated column;

a count means connected to receive the status indicator signals from each storage unit for directing its output to said storage units for storage therein, said count means incrementing the status indicator signals when each storage unit is addressed by its address signals;

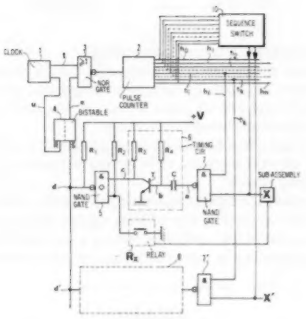
said storage units indicating valid data in its related cache store by the count status of said storage units in that levels lower than the level indicated by the status indicator signals points to valid data in the cache store and levels higher point to invalid data, with at least one status indicator signal indicating that all levels are full and contain valid data; and

clearing means connected to said count means and said storage units for resetting the status indicating signals, said clearing means activated by an initiate clear signal generated by a signal allowing peripheral access to said data processing system and by a signal from its associated processor signifying access allowed through a gate into a restricted area of a main memory store of the data processing system.

3,845,475
SEQUENTIAL DATA TRANSMISSION SYSTEM WITH INSERTION OF SLOW-SEQUENCE OPERATIONS

Jean-Claude Massaloux, Hauts-de-Seine, France, assignor to Jeumont-Schneider, Houts-de-Seine, France

Filed June 11, 1973, Ser. No. 368,628
Claims priority, application France, June 15, 1972, 72.21627
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **7 Claims**



1. In an assembly comprising a plurality of subassemblies, apparatus for inhibiting control pulses controlling fast sequence operations of relatively fast sub-assemblies to permit slow sequence operations for relatively slow sub-assemblies comprising:

a. clock means for providing clock pulses,

b. pulse counter means connected to receive said clock pulses and to provide said control pulses,

c. switching means connected to receive said control pulses and to provide a switching output signal associated with a first relatively slow sub-assembly,

d. logic means connected to receive said switching output signal and connected to inhibit said control pulses from said pulse counter means by providing a counter inhibit signal,

e. said logic means comprising:

a first timing circuit responsive to said switching output signal and said control pulses, said timing circuit providing a timed inhibit signal, said time inhibit signal terminating after a fixed time,

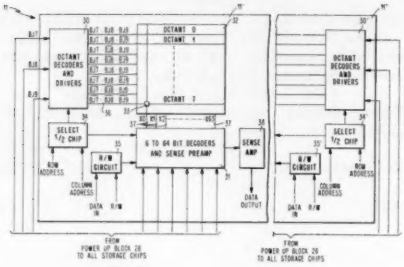
relay means controlled by said first relatively slow sub-assembly for providing a relay signal upon completion of said slow sequence of operations associated with said first relatively slow sub-assembly, and

first gate means connected to receive said timed inhibit signal and said relay signal, said first gate means providing said counter inhibit signal to said pulse counter means in response to said timed inhibit signal, and said first gate means terminating said counter inhibit signal in response to said relay signal.

3,845,476
MONOLITHIC MEMORY USING PARTIALLY DEFECTIVE CHIPS

Robert Francis Boehm, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,598
Int. Cl. G11c 11/40
U.S. Cl. 340—173 BB 15 Claims

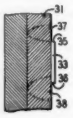


1. A monolithic memory comprising:
a plurality of nondefective integrated circuit chips;
a plurality of partially defective integrated circuit chips, each having one or more defects in the same predetermined sector thereof;
each of said chips having an array of memory cells therein; each of said memory cells having a respective address assigned thereto;
input means for signals addressing said cells; and
means for converting the address signals corresponding to those cells in said defective sectors to new address signals corresponding to locations in said non-defective chips.

3,845,477
METHOD FOR CONTROLLING MAGNETIZATION IN GARNET MATERIAL AND DEVICES SO PRODUCED

Roy Conway Le Craw, Summit; Hyman Joseph Levinstein, Berkeley Heights, and Raymond Wolfe, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Murray Hill, N.J.

Filed Nov. 24, 1972, Ser. No. 308,989
Int. Cl. G11c 11/14
U.S. Cl. 340—174 TF 14 Claims

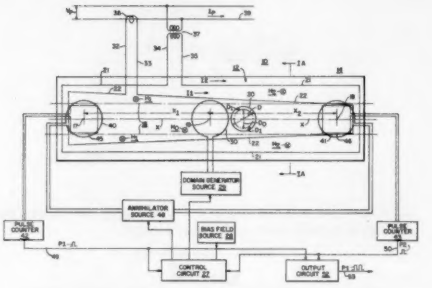


1. Method for altering a magnetic property of a body of an iron-containing composition of the garnet structure, such composition containing at least 5 cation percent of a substitutional ion other than iron in the tetrahedral and octahedral crystallographic sites based on the total number of cations in such sites, said method comprising heating of said body, characterized in that at least a portion of the said body is in intimate contact with elemental silicon during at least a portion of the said heating, in that heating is carried out in an atmosphere which is substantially non-reducing with respect to the said garnet, in that heating is carried out over the temperature range of from 500 degrees C to 950 degrees C, and in that heating is continued for a period of at least 5 minutes, up to a maximum of approximately 2 hours.

3,845,478
MAGNETIC DOMAIN COMPUTATIONAL ARRANGEMENT

Walter J. Carr, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1973, Ser. No. 422,477
Int. Cl. G11c 11/14
U.S. Cl. 340—174 TF 4 Claims



1. A magnetic domain computational circuit arrangement for computing the time integral of a product of two quantities, said arrangement comprising:
a magnetic layer of magnetic domain propagating material having a domain propagating channel defined therein;
means generating a single wall magnetic domain in said propagating channel;
first drive control magnetic field producing means establishing a uniform variable field being variable in space and in time in said propagating channel such that the field variations are effective to vary the size of said single wall magnetic domain;
a first input signal corresponding to one of said quantities for varying said first drive control magnetic field producing means in response to the magnitude of the one quantity;
a second drive control magnetic field producing means establishing a magnetic field gradient in said propagating channel such that the field gradient is uniform in space between the ends of said propagating channel and is cooperatively acting with the first magnetic field to propagate said magnetic domain in response to the product of the first and second magnetic fields;
a second input signal corresponding to the other of said two quantities for varying said second drive control magnetic field producing means as a function of time in response to the magnitude of said other quantity;
magnetic domain detector means located on said propagating channel at a predetermined spaced relationship relative to said magnetic domain generating means so as to be operated by a magnetic domain initiated by said domain generating means and driven to the location of the detector means by the combined driving effects of the first and second magnetic fields such that the time for a magnetic domain to be driven from the domain generating means to the domain detecting means represents the time integral of the product of said first and said second input signals.

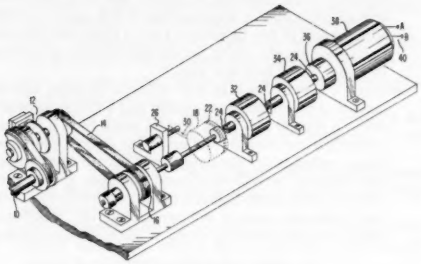
3,845,479
APPARATUS FOR TESTING ELECTRICALLY ACTUATED CLUTCHES

Donald F. Fabry, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 10, 1973, Ser. No. 405,166
Int. Cl. G08b 23/00
U.S. Cl. 340—213 R 8 Claims

1. An apparatus for testing the pick up and release times of clutches comprising:

drive means for rotating the drive portion of the clutch;
load means for placing a load on the load portion of the clutch;
encoding means for generating electronic pulses proportional to the speed of the load portion of the clutch;
encoder pulse generator means responsive to said encoder means for generating a signal indicating the speed of rotation of the load portion of the clutch;

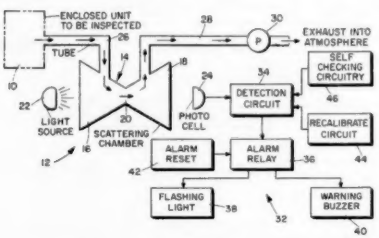


timing means responsive to said encoder pulse generator means for sequencing the steps within the test apparatus;
voltage control means responsive to said timing means for controlling the application of power to the clutch; and
indicator means responsive to said timing means for providing indications of the results of the tests on the clutch.

3,845,480
PARTICULATE DETECTOR SYSTEM

Samuel B. Steinberg, Baltimore, Md., assignor to Air Techniques, Inc., Baltimore, Md.

Filed Feb. 20, 1973, Ser. No. 333,625
Int. Cl. G01h *21/12*; **G08b** *17/10*
U.S. Cl. 340—236 **10 Claims**

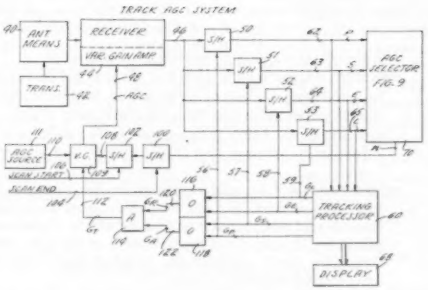


1. A system for detecting particulate level content within a selected environment, comprising, means for providing a confined passageway for movement of particulate matter there-through, means for moving a sampling of particulate matter from the selected environment and through the passageway of the providing means, means responsive to the content level of the particulate matter being moved through the confined passageway for developing a signal at least when the content level is at a predetermined level, means for indicating the development of the signal by the developing means to indicate that the content level of the particulate matter has reached at least the predetermined level, and means responsive to the development of the signal by the developing means for operating the indicating means, the operating means including a detection circuit which operates in response to the signal developed by the developing means to generate a signal, the detection circuit including a vacuum tube triode circuit having adjustable cathode self-bias and a grid-bias circuit for controlling operation of the tube in response to the signal developed by the developing means, and means for applying a predetermined potential to the grid-bias circuit in place of a potential normally applied thereto when the developed signal is applied to the grid-bias circuit so that the self-bias can be adjusted to calibrate the tube to operate precisely when the developed signal is subsequently applied to the gird-bias circuit, said predetermined potential being representative of the predetermined level of particulate material which is to be detected.

3,845,481
TARGET CONTROLLED AGC FOR SCAN RADAR NORMALIZATION

Paul M. Danzer, Norwalk, and Marshall Greenspan, Fairfield, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 26, 1973, Ser. No. 354,556
Int. Cl. G01s *9/14*
U.S. Cl. 343—7.3 **6 Claims**



1. In a scanning pulse radar system having processing means providing tracking gates for automatic cursor tracking of designated targets in response to video levels of target return signals falling in said tracking gates, the improvement comprising:
means for selecting in each scan of the radar system the lowest video level from among the video levels respectively corresponding to each of the tracking gates; and
means responsive to said last named means for controlling the gain of the receiver of said radar system in a succeeding scan in response to the lowest video level selected during a preceding scan.

3,845,482
AUTOMATIC JAMMER

John K. Jirousek, Fabius, N.Y., and G. Daniel Hickman, Germantown, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1970, Ser. No. 70,611
Int. Cl. H04k *3/00*
U.S. Cl. 343—18 E **3 Claims**

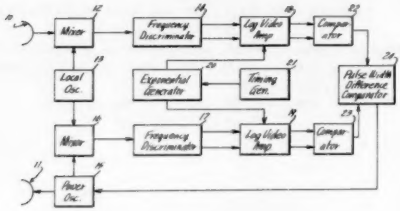
1. Apparatus for jamming a remote radar which is periodically transmitting radio frequency pulses comprising, in combination,
means for receiving said radio frequency pulses;
means for transmitting toward said remote radar a C.W. radio frequency signal;
a local oscillator;
means for mixing said received radio frequency pulses and a portion of said radio frequency signal with said local oscillator so as to produce IF pulses and an IF signal;
a pair of cascaded hybrid couplers having unequal length delay lines connected between the two outputs of each

first coupler and the two inputs of each second coupler of said pair;

means for feeding said IF pulses to the input of the first coupler of one pair and a pulse length portion of said IF signal to the input of the first coupler of the other pair;

a detector connected in each output of the second coupler of said pair, whereby the ratio of the logarithmic amplitudes of the pairs of video pulses developed by the two detectors of each second coupler is proportional to the frequencies of said IF pulse and said IF signal;

means for converting each pair of video pulses to a single



pulse whose width is proportional to said ratio;

means for comparing the widths of these single pulses and for producing an output pulse whose amplitude corresponds to the difference between these pulse widths, said amplitude being proportional to the difference in frequency between said IF pulses and said IF signal; and

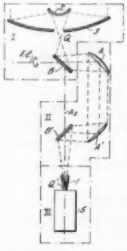
means controlled by said output pulse for changing the frequency of the C.W. radio frequency signal transmitted towards said remote radar so that the widths of the single pulses are equalized and the frequency of the C.W. radio frequency signal consequently matches that of the received radio frequency pulses.

3,845,483

ANTENNA SYSTEM

Shoji Soma, and Ikuro Sato, both of Tokyo, Japan, assignors to Nippon Electric Company, Tokyo, Japan

Filed Mar. 1, 1973, Ser. No. 336,957
Claims priority, application Japan, Mar. 8, 1972, 47-23161
Int. Cl. H01q *3/12, 19/14*
U.S. Cl. 343—761 **2 Claims**



1. A microwave antenna system having a microwave source for radiating microwave energy in a predetermined direction with a preset disperse angle, a dual reflector antenna having a main reflector and a subreflector and microwave path for guiding said microwave energy to said antenna so that the microwave energy may be transmitted through said antenna most efficiently, wherein said microwave path comprises:

a first planar reflector for deflecting said microwave energy by 90°;

a first curved reflector for deflecting the microwave energy by a predetermined angle;

a second curved reflector for deflecting the microwave reflected from said first curved reflector;

a second planar reflector for directing the reflected microwave supplied from said second curved reflector to the subreflector of said dual reflector antenna;

means for supporting said first planar reflector and first and second curved reflectors to permit said first and second curved reflectors to revolve about a first axis coincident with the axis of the microwave energy emanating from the microwave source and to permit said first planar reflector to rotate about said first axis;

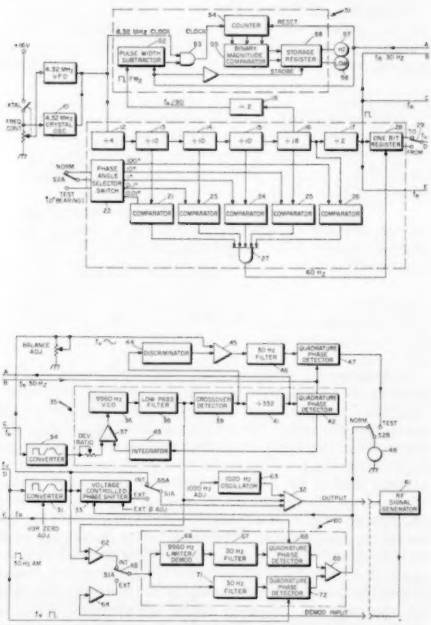
means for supporting said dual reflector antenna and said second planar reflector to permit said antenna to revolve about a second axis lying at right angle to said first axis of the first-mentioned rotation and to permit said second planar reflector to rotate about said second axis; whereby the first-and second-mentioned rotations provides the control of the azimuthal and elevational direction of said dual reflector antenna without causing any transformation of the transmission mode of the microwave energy.

3,845,484

SIGNAL GENERATOR FOR TESTING VOR NAVIGATION RECEIVERS

Joseph J. Sawicki, Lighthouse Pt., and Charles D. Talbert, Ft. Lauderdale, both of Fla., assignors to The Bendix Corporation, Southfield, Mich.

Filed June 12, 1973, Ser. No. 369,336
Int. Cl. G01s *7/40, 1/44*
U.S. Cl. 343—106 R **13 Claims**



1. A signal generator for testing a VOR receiver which receiver provides bearing information by comparing the phase

of a variable signal with a reference signal, said reference and variable signals being transmitted to said receiver as a composite signal simultaneously frequency and amplitude modulated, comprising

a stable oscillator operating at a frequency which is a high order harmonic of the frequency of said reference signal; digital means for dividing in multiple stages the frequency of said stable oscillator to the frequency of said reference signal;

presettable logic means for detecting accumulation of count by said dividing means corresponding to a selected phase angle between said reference and variable signals;

register means triggered by said logic means and settable upon receipt of trigger from said logic means to the relative polarity at the instant of triggering of the output of said dividing means;

a subcarrier generator providing an output having a frequency substantially higher than the frequency of said reference signal;

means for modulating the frequency of subcarrier output from said subcarrier generator by output from said dividing means;

means for modulating the amplitude of said frequency modulated subcarrier output by output from said register means to provide a composite signal; and

means for applying said composite signal to the VOR receiver to be tested.

3,845,485

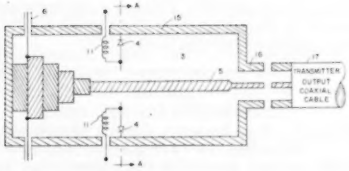
NON-ROTATING ANTENNA

Ernest G. Parker, Convent Station, N.J.; Constantino Lucanera, Blauvelt, N.Y., and Richard W. Craine, Nutley, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 18, 1973, Ser. No. 352,154

Int. Cl. G01s *1/50*

U.S. Cl. 343—106 R **7 Claims**



1. A method of modulating a transmitter carrier signal in the distribution cavity of a non-rotating antenna, which antenna produces a limacon radiation pattern comprising:

injecting all of said transmitter carrier signal into the center conductor of an RF impedance transformer located within said distribution cavity;

sequentially exciting, according to a predetermined pattern, a plurality of probes projecting into the distribution cavity to excite the H_{11} coaxial mode of propagation in the cavity;

adjusting the phase of the RF currents in said excited probes to bring the resulting modulation component in phase with the carrier at a desired center frequency; and

extracting signals having the desired amplitude and phase functions from the outputs of said transformer.

3,845,486

DOPPLER MICROWAVE LANDING SYSTEMS

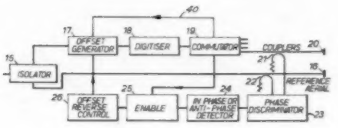
John Peacock Birchenough, Chichester, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Jan. 3, 1973, Ser. No. 320,811

Claims priority, application Great Britain, Jan. 4, 1972, 335/72

Int. Cl. G01s *1/38*

U.S. Cl. 343—106 D **3 Claims**



1. A ground station of a doppler microwave radar system comprising an aerial array having a plurality of elements and adjacent one end of said array a reference aerial, transmitter means providing the reference aerial with a reference signal and the aerial array with a scanned signal frequency which is offset by a predetermined offset frequency from the reference signal, commutator means operative for feeding said scanned signal sequentially to the elements of the array so that a point from which signal transmission occurs is scanned from one end to the other of said array and back again, and means operative to change the scanned frequency by twice the offset frequency when that element of the array closest to the reference aerial is fed by said commutator and when the rate of change of amplitude of the beat frequency difference between the reference frequency and the scanned frequency is zero.

3,845,487

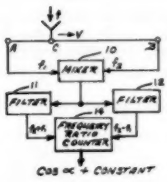
RADIO DIRECTION FINDING SYSTEM

Uve H. W. Lammers, 5 San Mateo Dr., Chelmsford, Mass. 01824

Filed Sept. 26, 1972, Ser. No. 292,370

Int. Cl. G01s *3/52*

U.S. Cl. 343—113 DE **2 Claims**

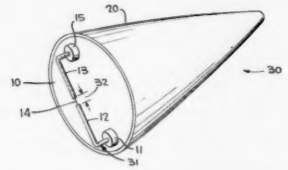


1. A radio direction finding system depending on the angle dependent doppler shift imposed on a distant-source signal of frequency f comprising a single antenna exclusively receiving said distant source signal, said single antenna having an electronically simulated motion, first and second doppler shifted signals of frequencies f_1 and f_2, respectively, propagating along and against the direction of motion of said single antenna, first and second terminals receiving said first and second doppler shifted signals, respectively, said single antenna being positioned between said first and second terminals, means to add only the frequencies f_1 and f_2 of said first and second doppler shifted signals, respectively, to obtain a second resultant frequency signal, and means to divide said first resultant frequency signal by said second resultant frequency signal to obtain the angle of arrival measurement.

3,845,488
REARMOUNTED FORWARD-LOOKING RADIO FREQUENCY ANTENNA FOR PROJECTILES

Howard S. Jones, Jr., Washington, D.C., and Arthur R. Sindoris, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,118
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 **10 Claims**

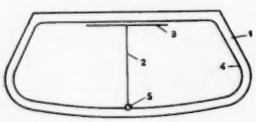


1. A forward-looking radio frequency antenna for projectiles comprising:
   a. a hollow metal nose cone having a metal base;
   b. a solid metal L-shaped cylindrical rod having a first end face and a second end face, said first end face attached to said base at a first point;
   c. a hollow metal L-shaped cylindrical tube having a first open end face and a second open end face, said first open end face attached to said base at a second point;
   d. a metal wire attached at one end to said solid rod and extending through said hollow tube;
   e. a source of radio frequency power connected across said hollow tube at said base and the other end of said wire at said base;
   f. a dielectric material filling the space inside said hollow tube and around said wire therein; and
   g. the end face of said tube and the end face of said rod being disposed opposite one another across a gap, the arms of said rod and said tube being located on the same axis of symmetry.

3,845,489
WINDOW ANTENNA

Gerd Sauer, Broichweiden; Heinz Kunert, Cologne, and Heinz Moebs, Herzogenrath, all of Germany, assignors to Saint-Gobain Industries, Neuilly sur Seine, France

Filed Sept. 14, 1971, Ser. No. 180,361
Claims priority, application France, Sept. 16, 1970, 70.33574
Int. Cl. H01q *1/32, 21/30*
U.S. Cl. 343—713 **16 Claims**

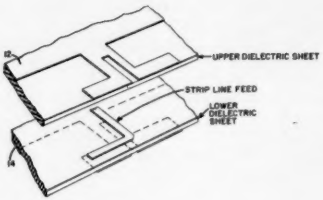


1. An AM-FM radio antenna for a radio receiver mounted in a vehicle having an opening defined by a metallic frame for a window, such as a windshield, comprising a window mounted in said frame, fine wire conductors applied to the window as a T-shaped branch and a generally U-shaped branch, and an output terminal for said branches and the feedline to the radio receiver centrally disposed on the window a short distance from such frame at the bottom edge of the window, the base of said T-shaped branch being connected to said terminal and the crossbar thereof being generally parallel to and spaced a short distance from said frame along the upper edge of the window and said U-shaped branch being connected at the center point thereof to said terminal and extending from said terminal in a path spaced a short distance from said frame.

3,845,490
STRIPLINE SLOTTED BALUN DIPOLE ANTENNA

Thomas E. Manwarren, Pulaski, and Kenneth J. Scott, Baldwinsville, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed May 3, 1973, Ser. No. 357,029
Int. Cl. H01q *9/16, 21/08;* **H01p** *3/08*
U.S. Cl. 343—821 **9 Claims**



1. An integral antenna and transmission line structure comprising two sheets of dielectric material each partially covered with a skin of electrically conducting material arranged in predetermined pattern, said sheets being joined together in a laminated structure, said laminated structure having an antenna portion proximate one edge, the remainder of said structure constituting a transmission line portion, said skin on the sides of said sheets which form the exterior of said structure substantially covering said transmission line portion and on said antenna portion defining a T-shaped antenna dipole with the crossbar of the T adjacent an edge of said structure and the stem of the T extending from the center of the crossbar to said transmission line portion of the structure, each said T portion of skin being slotted from the center of the crossbar into the stem to divide the dipole defined thereby into two separate arms each having a separate pillar of the stem of the T, said skin on the sides of said sheets which have been joined interiorly of said laminated structure constituting the center conductor in the transmission line portion and a stripline antenna feed in the antenna portion.

3,845,491
ERASABLE TRACE RECORDER

Rene Beguin, Chene-Bougeries, Geneva, Switzerland

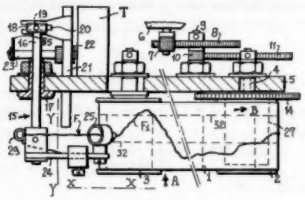
Filed Mar. 13, 1973, Ser. No. 340,720
Claims priority, application Switzerland, Mar. 22, 1972, 4297/72
Int. Cl. G01d *9/12*
U.S. Cl. 346—21 **2 Claims**

1. A trace recorder comprising a record support providing an endless first surface,
   a recording member,
   a frame defining a recording station therein,
   means mounting said record support for movement in said frame to traverse said first surface of the record support in a first direction through said recording station, said mounting means for the record support allowing continuous recirculating movement of said first surface through said recording station,
   means mounting said recording member in said frame for movement through said recording station in a direction transverse to said first direction to trace a path over said first surface,
   an endless loop filamentary indicator element,

supply means for said endless loop filamentary indicator element,

said recording member including guide means for said endless loop filamentary indicator element via which said indicator element passes from said supply means to said first surface of the record support,

said filamentary indicator element and first surface of the record support having mutual retaining means for retaining the indicator element of said first surface when applied thereto by said recording member, whereby the filamentary indicator element will be laid on said surface along the path of the recording member thereover to provide a record of said path until the filamentary indicator element is detached from said first surface of said record support, and



means for detaching said indicator element from said first surface at a station spaced from said recording station and for supplying the detached indicator element to said supply means, said supply means being constituted by further guide means guiding the filamentary indicator element to the first mentioned guide means, said means for detaching said indicator element from said support and supplying it to said further guide means including a capstan for pulling said indicator element from said record support and for feeding the detached indicator element at a predetermined reduced tension to said further guide means, means rotatably punting the capstan in said frame and drive means for rotating the capstan, and said filamentary indicator element making at least one turn around said capstan.

3,845,492

METHODS AND APPARATUS FOR RECORDING WELL LOGGING MEASUREMENTS

Roberto Armando Tejada, Talara, Peru, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed July 12, 1973, Ser. No. 378,735

Int. Cl. G01d *9/38*

U.S. Cl. 346—33 WL **27 Claims**

1. Apparatus for recording well-logging data as distinctive indicia respectively representative of at least two selected parameters at various depths in a well bore and comprising:

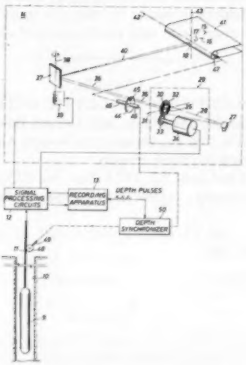
means adapted for providing first and second data respectively representative of successive determinations of two selected well-logging parameters derived upon movement of a well-logging tool through a well bore;

a recording medium sensitive to energy of a predetermined character;

means cooperatively arranged for selectively driving said recording mediun along a predetermined travel path as a function of the depth positions of a well-logging tool providing said successive determinations;

means cooperatively arranged for providing an intermittent, selectively orientable and directable first beam of said energy having an identifiable transverse axis and adapted for successively placing selectively-positioned first distinctive indicia representative of said two welllogging parameters at selected first locations on said recording medium;

control means responsive to said first data for successively orienting said selectively-orientable first beam to orient its said transverse axis in selected angular alignments which are functionally representative of one of said well-logging parameters and responsive to said second data for successively directing said selectively-orientable first beam toward corresponding ones of said first locations on



said recording medium which are functionally representative of the other of said well-logging parameters; and

means cooperatively arranged for sequentially producing an intermittent, fixed second beam of said energy for successively placing second distinctive indicia at selectively-spaced second locations on said recording medium which are functionally representative of the depth positions of a well-logging tool providing said successive determinations.

3,845,493

FEELER DEVICE FOR ENGAGING A FILM PERFORATION TO STOP FILM TRANSPORT

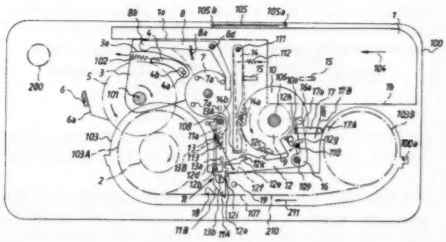
Hubert Hackenberg, and Siegfried Zobel, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 21, 1974, Ser. No. 453,373

Claims priority, application Germany, Mar. 27, 1973, 2315178

Int. Cl. G03b *19/04, 17/28*

U.S. Cl. 354—213 **12 Claims**



1. In a photographic apparatus, particularly in a still camera for use with photographic roll film having a row of perforations, one for each film frame, a combination comprising a housing having a chamber for a supply of film; film transporting means having input means movable back and forth and operative to advance the film in said housing lengthwise in response to movement in a predetermined direction; position-

ing means movable in said housing in response to operation of said input means; a feeler arranged to engage the film in said housing and to penetrate into an oncoming perforation of the film; arresting means movably installed in said housing and arranged to arrest said positioning means in response to penetration of said feeler into said oncoming perforation upon completion of film transport by the length of a frame, said input means being movable counter to said predetermined direction; and means for disengaging said arresting means from said positioning means in response to movement of said input means counter to said predetermined direction.

3,845,494

HGTE-CDTE PHOTOVOLTAIC DETECTORS

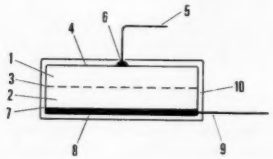
Jacques Francois Ameurlaine, and Gerard David Cohen-Solal, both of Paris, France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Jan. 12, 1973, Ser. No. 323,222

Claims priority, application France, Jan. 27, 1972, 72.02654

Int. Cl. H01l *11/00, 15/00, 15/02*

U.S. Cl. 357—30 **6 Claims**



1. An HgTe-CdTe photovoltaic detector comprising an HgTe-CdTe semiconductor plate having two different doped regions separated by a junction, said plate being completely coated with a continuous film of a metallic sulphide or selenide for preventing outward diffusion of mercury vapor from said plate.

3,845,495

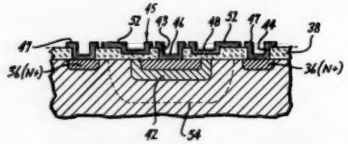
HIGH VOLTAGE, HIGH FREQUENCY DOUBLE DIFFUSED METAL OXIDE SEMICONDUCTOR DEVICE

Thomas P. Cauge, and Joseph Kocsis, both of Mountain View, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 183,271, Sept. 23, 1971, abandoned. This application Oct. 12, 1973, Ser. No. 406,003

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—23 **12 Claims**



1. In a high voltage, high frequency metal insulator semiconductor device, a semiconductor body having a conductivity of one type and forming a substantially uniform lightly doped drain region, said semiconductor body having a substantially planar surface, a heavily doped drain contact region formed in the drain region and extending to said surface a layer of insulating material formed on said surface, a channel region formed in the semiconductor body having a conductivity opposite that of the semiconductor body to form a first P-N junction extending to the surface beneath said layer of insulating material, a source region formed within the channel region of the first named conductivity type and forming a second P-N junction extending to said surface beneath said layer of insulating material, said first and second P-N junctions extending to said surface beneath said layer of insulating material, said first and second P-N junctions defining a channel of precise length, metallization forming gate, source and drain contacts, said metallization overlying said layer of insulating material and making contact through the insulating layer with the drain contact and source regions, said metallization overlying the channel and being separated from the channel by said layer of insulating material to form the gate contact, and additional metallization formed on said layer of insulating material and extending between the metallization which provides said gate and drain contacts and in such a manner so that the additional metallization is disposed unsymmetrically with respect to the channel, said additional metallization extending over a drift region formed in the uniformly lightly doped region between the channel and the heavily doped contact region.

3,845,496

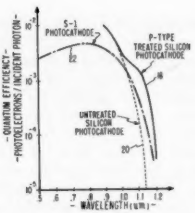
INFRARED PHOTOCATHODE

Ramon Ubaldo Martinelli, Hightstown, and Bernard Goldstein, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,733

Int. Cl. H01d *15/00*

U.S. Cl. 357—30 **10 Claims**



1. The semiconductor device for sensing radiation comprising:

a. a silicon substrate,

b. a surface region having a work-function-reducing layer on the (100) surface of said substrate, and

c. a surface impurity concentration of at least 10^{12} carbon atoms/cm^2 within said surface region.

ERRATUM

For Class 358—4 see:
Patent No. 3,845,237

3,845,497

COLOUR VIDEO SIGNAL RECORDING AND REPRODUCING SYSTEM AND APPARATUS

Yuzuru Inoue, and Takashi Shinozaki, both of Tokyo, Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ken, Yokohama City, Japan

Filed Mar. 1, 1972, Ser. No. 230,911

Claims priority, application Japan, Mar. 4, 1971, 46-11148

Int. Cl. H04n *9/02*

U.S. Cl. 358—8 **5 Claims**

1. A color video signal recording and reproducing system which comprises:

a first filter means for separating a luminance signal from the color video signal;

means for frequency modulating the separated luminance signal;

a second filter means for separating a chrominance signal from the color video signal;

a first frequency converting means for frequency converting the separated chrominance signal to a low frequency band;

means for mixing the output of the frequency modulating means and the output of the first frequency converting means;

means for recording the mixed signal on a recording medium and reproducing the same;

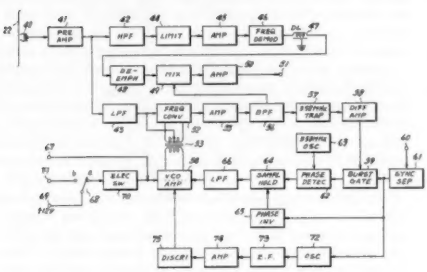
a third filter means for separating the frequency modulated luminance signal from the signal reproduced by the recording and reproducing means;

means for frequency demodulating the frequency modulated luminance signal thus separated;

a fourth filter means for separating the frequency converted chrominance signal from the reproduced signal;

a second frequency converting means for restoring the frequency converted chrominance signal thus filtered to the original frequency band;

an automatic phase control loop including means for separating a color burst signal from the output signal of the second frequency converting means, source means for generating a reference subcarrier frequency signal, means for comparing the phases in the output of the source means and the color burst signal, nd a voltage controlled oscillator means having an oscillation center frequency



controlled by the output of the phase comparing means, said voltage controlled oscillator means supplying its output signal to the second frequency converting means; means for mixing the frequency demodulated luminance signal and the output chrominance signal of the second frequency converting means for obtaining the reproduced color video signal;

means for supplying a reference signal for frequency conversion to the second frequency converting means;

switch means operable between positions for a normal reproduction mode and for another reproduction mode for dubbing recording thereby to switch an applied voltage;

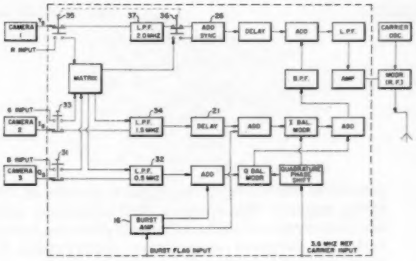
electronic switching circuit means for performing an electronic switching operation corresponding to the switching of the applied voltage responsive to the switching operation of the switch; and

means whereby said voltage controlled oscillator means operates as either a voltage controlled oscillator or an amplifier corresponding to the switching operation of the electronic switching circuit means, and means whereby said voltage controlled oscillator means operates as a voltage controlled oscillator responsive to the output of the phase comparing means during the normal reproduction mode and operates as an amplifier when supplied with the reference signal for frequency conversion during the other reproduction mode for dubbing recording.

3,845,498
RECEIVER FOR AN EDUCATIONAL BRANCHING SYSTEM

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,165
Int. Cl. H04n *9/02*
U.S. Cl. 358—11 **15 Claims**



1. In television system for transmitting and receiving at least two separate and independent video signals using a single radio-frequency carrier signal, the combination of:

means for producing a complete first video signal corresponding to a first video image,

a filter for limiting the upper frequency of said first video signal,

means for producing a complete second video signal corresponding to a second video image, said second video signal being separate and independent from said first video signal,

a filter for limiting the upper frequency of said second video signal,

means for modulating the filtered second video signal onto a subcarrier to form a modulated subcarrier having a frequency domain essentially non-overlapping with the frequency domain of the filtered first video signal,

means for combining the filtered first complete video signal and the filtered second complete video signal after modulation with a subcarrier to form a composite video signal, means for transmitting said composite signal on a single radio-frequency carrier signal,

means for detecting the complete first video signal and the modulated subcarrier with the complete second video signal from said single radio-frequency carrier signal,

means for demodulating the modulated subcarrier to recover the complete second video signal, and

switching means for selecting one of the detected complete video signals for display of the video image represented thereby upon a cathode-ray tube of a television receiver.

3,845,499
APPARATUS FOR ORIENTING MAGNETIC PARTICLES HAVING A FIXED AND VARYING MAGNETIC FIELD COMPONENT

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

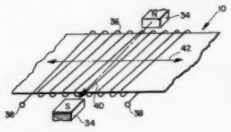
Continuation of Ser. No. 216,862, Jan. 10, 1972, abandoned, which is a division of Ser. No. 861,019, Sept. 9, 1969, Pat. No. 3,683,382. This application Mar. 26, 1973, Ser. No. 344,975
Int. Cl. G11b *5/02*
U.S. Cl. 360—56 **3 Claims**

1. A means for orienting magnetic particles comprising:

means defining a predetermined volume capable of receiving magnetic particles to be oriented and associated magnetic particle support means therein and producing a first

fixed magnetic field in said predetermined volume and having all magnetic field components within said volume substantially parallel to a plane passing through said volume and

means for producing a second magnetic field having a component with a periodically varying amplitude and direction within said volume, said means for producing a second magnetic field including a coil arranged to be energized by an alternating current signal to produce an alternating magnetic field having a field component within said predetermined volume and in said plane and said coil having an elongated cross section encompassing said predetermined volume, said component of said second magnetic field combining with first magnetic field to form a magnetic field vector having a plane of rotation lying wholly within said plane.

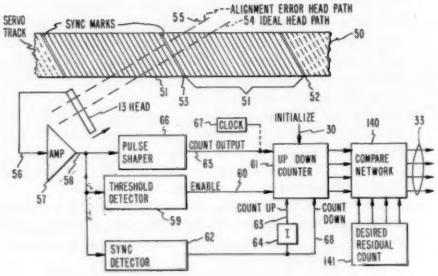


3,845,500

HEAD TO TRACK ALIGNMENT IN A ROTATING HEAD MAGNETIC TAPE UNIT

Gary A. Hart, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,080
Int. Cl. G11b *21/10*
U.S. Cl. 360—77 **22 Claims**



1. In a rotating head magnetic tape unit, improved means for maintaining head to data track alignment, comprising:

a length of magnetic tape having a longitudinal servo track recorded thereon, said servo track including a constant frequency pattern interrupted by sync marks of a distinctively different pattern which define the physical location of associated transverse data tracks,

reading means including said rotating head operable to read a section of said servo track as said head sweeps across said servo track,

reversible counter means controlled by said reading means and operable to accumulate a count during said sweep, which count bears a known relationship to said constant frequency pattern, and

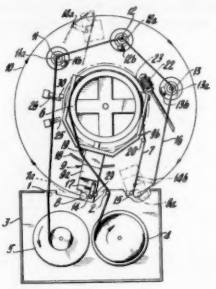
counter control means controlled by said reading means and operable to change the counting sense of said counter means in accordance with the time of occurrence of said sync marks, such that the residual count in said counter means at the end of said sweep is a measure of the alignment of said head with a data track.

3,845,501

VIDEO RECORDING AND/OR REPRODUCING APPARATUS HAVING AN AUTOMATIC TAPE THREADING MECHANISM

Takashi Katsuta; Masataka Hattori; Masao Inaba; Minao Iwamoto, and Takashi Suzuki, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 29, 1973, Ser. No. 327,781
Claims priority, application Japan, Feb. 4, 1972, 47-13014; Nov. 13, 1972, 47-114170
Int. Cl. G11b *23/04, 15/66, 5/52*
U.S. Cl. 360—85 **8 Claims**



1. Video recording and/or reproducing apparatus in which a magnetic tape is helically scanned by at least one rotary magnetic head, comprising;

means for housing said magnetic tape, said housing means having two tape reels disposed substantially side by side; tape guiding means for guiding said magnetic tape along the periphery thereof, said tape guiding means having a clearance gap with respect to the rotating magnetic head for permitting the rotary magnetic head to be rotated in the vicinity thereof, said tape guiding means further having a substantially helical groove disposed on the outer surface thereof;

loading arm means including a follower roller disposed for travel within said groove, said loading arm means thereby moving in a substantially helical path around said tape guiding means;

said loading arms means extracting said magnetic tape from said tape housing means and threading said magnetic tape about said tape guiding means during the helical movement thereof;

driving means for rotating said loading arm means about said tape guiding means to dispose said magnetic tape on said tape guiding means;

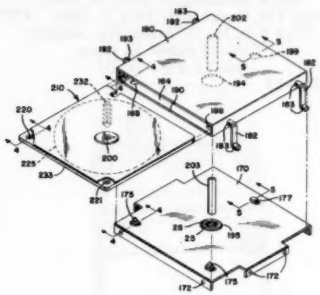
means for transporting said magnetic tape in a longitudinal direction; and

roller means disposed on said loading arm means at a distance radially outward from the surface of said tape guiding means and for engaging said magnetic tape with said transporting means.

3,845,502
CASSETTE LOCATING SYSTEM

Robert L. Paus, Centerville, Ohio, assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Feb. 22, 1973, Ser. No. 334,698
Int. Cl. G11b 3/04, 5/00
U.S. Cl. 360—86 3 Claims



1. In a magnetic recording system including a support panel, a drive hub mounted in the support panel, means for rotating the drive hub, a magnetic transducer movably mounted in spaced relation to the drive hub and movable to selected positions along a path toward and away from the drive hub, a recording disc having at least one magnetizable surface, a cassette surrounding the disc and having an elongated opening therein adjacent the magnetizable surface and aligned with the path of movement of the transducer providing access for the transducer to the surface, a driven hub attached to the disc and accessible adjacent the surface of the cassette to the drive hub, the improvement comprising:

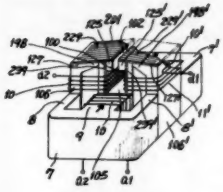
locating means including a plurality of support points on the support panel and corresponding receiving means on the cassette, the cassette resting upon and being located by said support points and receiving means to locate and support the cassette in a predetermined position on the support panel to align the drive hub with the driven hub and to align the elongated opening with the transducer, and

a carriage movable between a loading position and an operating position and constructed to hold the cassette, said carriage having openings to allow said support points to pass into the carriage to support and locate the cassette thereon.

3,845,503
FLUX SCANNING TRANSDUCER HAVING ANISOTROPIC SOFT MAGNETIC INNER POLE PIECE

Kenji Kanai, Higashi-Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma City, Osaka Prefecture, Japan

Filed Dec. 4, 1972, Ser. No. 312,213
Claims priority, application Japan, Dec. 14, 1971, 46-101590; Dec. 14, 1971, 46-101591; Dec. 14, 1971, 46-101592; Dec. 15, 1971, 46-102492
Int. Cl. G11b 5/12, 5/26
U.S. Cl. 360—115 6 Claims



1. A magnetic scanning transducer comprising

an inner pole piece (1) comprised of a pair of poles (3, 3') with first opposed ends forming a recording gap,

a pair of outer pole pieces (6, 6'), ends (198, 198') of which magnetically couple with the respective poles (3, 3') of said inner pole piece (1),

at least one signal coil magnetically coupled with said inner pole piece,

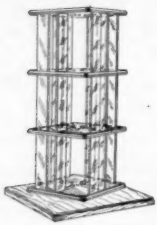
a pair of scanning electromagnets (7, 7'), magnetically coupled across both sides of the other ends (4) of said poles of said inner pole piece (1) and both sides of the outer ends of said outer pole pieces (6, 6'), respectively, said pair of scanning electromagnets (7, 7') being provided with scanning coils (10, 10') which are energized for applying magnetizing forces to said inner pole piece, said magnetizing forces being of one polarity at one end of the recording gap and decreasing in value to zero between both ends of said gap and then reversing in polarity and increasing in value toward the other end of said gap,

characterized in that the inner pole piece (1) is made of at least one plate of material having anisotropic soft magnetic characteristics, wherein the direction of greater permeability is at right angles with the axis of the recording gap and wherein said signal coil (11) is wound around the outer pole piece (6) and a central part (39) between said first end (3) and the other end (4) of said inner pole piece (1).

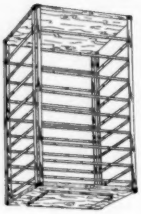
DESIGNS

OCTOBER 29, 1974

233,379
DISPLAYER FOR PAPERBACK BOOKS
Harold L. Hudson, Gregory G. Mt. Pleasant, and Robert K. Scherzer, Liverpool, N.Y., assignors to Gaylord Bros., Inc., Syracuse, N.Y.
Filed Feb. 20, 1973, Ser. No. 333,550
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—23



233,380
EARRING DISPLAY STAND
Norman H. Hyman, 6040 N. Lake Drive, Whitefish Bay, Wis. 53217
Filed Apr. 2, 1973, Ser. No. 347,179
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—27



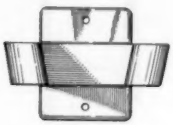
233,381
STOOL
Thomas E. Wright, 1203 Chanticleer Lane, Hinsdale, Ill. 60521
Filed Mar. 19, 1973, Ser. No. 342,618
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—29

233,382
COMBINED BENCH AND TABLE
Ralph Mondragon, Taos, N. Mex. (P.O. Box 199, Ranchos de Taos, N. Mex. 87571)
Filed Feb. 16, 1973, Ser. No. 346,964
Term of patent 14 years
Int. Cl. D6—*01, 03*
U.S. Cl. D6—33

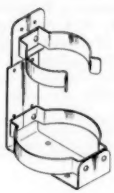
233,383
CHAIR
Minoru Ikeda, Tokyo, Japan, assignor to France Bed Co. Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,685
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76

233,384
SUPPORT STRUCTURE FOR COCKTAIL BAR
Richard S. Stanuseich, June Stanuseich, and Michael Albert Thomas, all of 6933 Florin-Perkins Road, Sacramento, Calif. 95828
Filed Jan. 14, 1972, Ser. No. 218,045
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—113

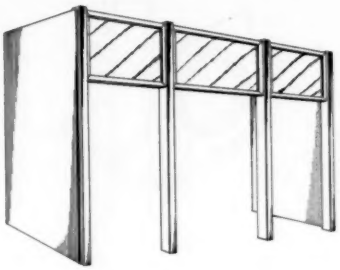
233,385
WALL MOUNTABLE BRACKET
Harvey L. Friedman, 6361 Fairhaven Road, Mayfield Heights, Ohio 44124
Filed Sept. 15, 1972, Ser. No. 289,689
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—114



233,386
SUPPORT BRACKET FOR A VACUUM BOTTLE OR SIMILAR ARTICLE
Roy B. Hammett, P.O. Box 778, Denton, Tex. 76201
Filed Apr. 3, 1972, Ser. No. 240,907
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—136



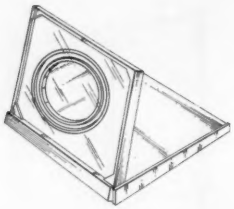
233,387
DISPLAY MODULE FOR A BANK OF VENDING MACHINES
Eldor A. Kluge, Oak Lawn, Robert G. Kosirog, Hampshire, and Thomas H. Wiebe, Arlington Heights, Ill., assignors to Canteen Corporation, Chicago, Ill.
Filed Sept. 1, 1972, Ser. No. 285,889
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



233,388
DISPLAY STAND OR SIMILAR ARTICLE
Jerome A. Moss, 107 E. 31st St., New York, N.Y. 10016
Filed Mar. 12, 1973, Ser. No. 340,445
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153

233,389
DRESSER OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to The Vaughan Furniture Company, Inc., Galax, Va.
Filed Jan. 17, 1973, Ser. No. 324,554
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154

233,390
DISPLAY CASE FOR COINS OR THE LIKE
Fred Povitz, 5519 Cavendish St., Cote St. Luc, Montreal, Quebec, Canada
Filed June 20, 1972, Ser. No. 264,575
Claims priority, application Canada May 9, 1972
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—173

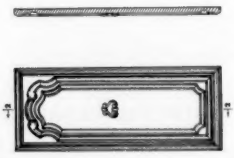


233,391
TABLE
Carl G. Hazelwood, 788 Manzano Drive, Walled Lake, Mich. 48088
Filed May 3, 1972, Ser. No. 250,103
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

233,392
PORTABLE TABLE
Virgil James Hutchison, 8901 W. 97th St., Overland Park, Kans. 66212
Filed Oct. 6, 1972, Ser. No. 295,500
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178

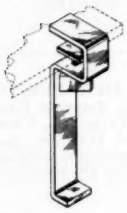
233,393
DISPLAY RACK
Simon Martin, 42 Dellwood Road, and Milan Arent, 9 Iroquois St., both of Worcester, Mass. 01602
Filed Sept. 29, 1972, Ser. No. 293,320
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—181

233,394
FURNITURE PANEL OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to White Furniture Company, Mebane, N.C.
Filed Sept. 9, 1971, Ser. No. 179,254
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



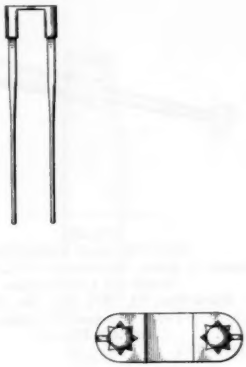
233,395
FURNITURE PANEL OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to Empire Furniture Corporation, Johnson City, Tenn.
Filed Sept. 9, 1971, Ser. No. 179,263
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

233,396
FURNITURE LEG
Francois Arnal, 74 Rue Amelot, Paris, France XI
Filed Dec. 22, 1972, Ser. No. 317,797
Claims priority, application France Sept. 5, 1972
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194

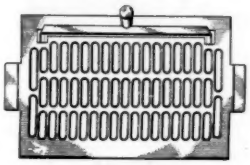


233,397
COMBINED ELECTRIC COOKING AND SERVING UTENSIL
Daniel E. McCue, Santa Barbara, Calif., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Feb. 14, 1972, Ser. No. 226,368
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94

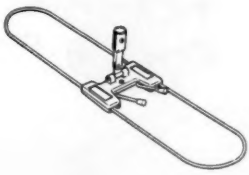
233,398
COMBINED RESILIENT HOLDER AND CHOPSTICKS
Larry Y. N. Lee, 326 Bloom Drive, Monterey Park, Calif. 91754
Filed Mar. 15, 1973, Ser. No. 341,687
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—105



233,399
COOKING GRILL
Edward M. Marshall, 4819 Hidden Harbor Blvd. SW., Fort Myers, Fla. 33901
Filed May 21, 1973, Ser. No. 362,375
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



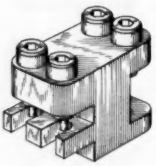
233,400
MOP SUPPORT
Alan George North, 18 Seymour Gardens, Hanworth, Middlesex, England
Filed Mar. 8, 1973, Ser. No. 338,805
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D7—180



233,401
CLEANING IMPLEMENT FOR BARBEQUE GRILLES
William Bruce Delamater, 9114 Valley View, Whittier, Calif. 90603
Filed May 30, 1972, Ser. No. 258,218
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184

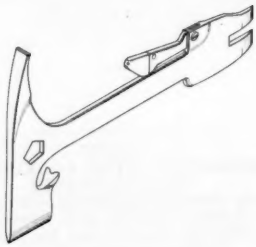
233,402
REFUSE BAG HOLDER
Richard T. Kane, Rochester, N.Y., assignor to Mobil Oil Corporation
Filed Mar. 23, 1972, Ser. No. 237,599
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—193

233,403
CHAIN ASSEMBLY AND DISASSEMBLY TOOL
Francis T. Copple, Agawam, Mass., assignor to Rexnord Inc., Milwaukee, Wis.
Filed Feb. 20, 1973, Ser. No. 333,895
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



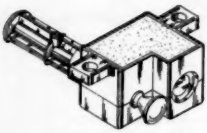
233,404
TOOL HOLDING CLAMP
John M. Aiken, 300 E. 9th St., Hastings, Nebr. 68901
Filed May 15, 1972, Ser. No. 253,694
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—73

233,405
FIREMAN'S MULTIPLE PURPOSE HAND TOOL
Jack L. Frey, American Canyon, Calif. (2525 Fairgrounds Drive 106, Vallejo, Calif. 94590)
Filed Jan. 8, 1973, Ser. No. 321,767
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—76



233,406
REVERSIBLE DRIVE RATCHET HAND TOOL WITH SPHERICAL HANDLE
Carlton L. Whiteford, Westport, Conn., assignor to Creative Tools, Inc., Bennington, Vt.
Filed Feb. 7, 1973, Ser. No. 330,174
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—82

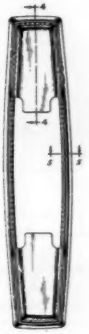
233,407
IGNITION LOCK HOUSING
Sam Barmherzig, 1457 E. 86th St., Brooklyn, N.Y. 11236
Filed June 21, 1973, Ser. No. 372,277
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—113



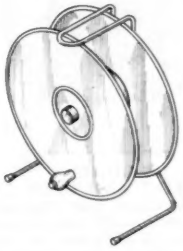
233,408
BACKPLATE
David P. Zagaroli, Hickory, N.C., assignor to Ajax Hardware Corporation, City of Industry, Calif.
Filed Mar. 14, 1973, Ser. No. 341,146
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179

233,409
PULL BACKPLATE
David P. Zagaroli, Hickory, N.C., assignor to Ajax Hardware Corporation, City of Industry, Calif.
Filed Mar. 14, 1973, Ser. No. 341,147
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179

233,410
ESCUTCHEON PLATE
Raymond U. H. Tegner, Lodi, Wis. (% Amerock Corporation, 4000 Auburn St., Rockford, Ill. 61101)
Original design application Nov. 10, 1972, Ser. No. 305,325. Divided and this application Jan. 22, 1974, Ser. No. 435,572
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



233,411
REEL FOR CORDS AND THE LIKE
Robert C. Geisler, 112 Exmoor Ave., Glen Ellyn, Ill. 60137
Filed Aug. 9, 1973, Ser. No. 387,046
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—222

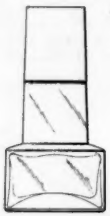


233,412
EXPANSION ANCHOR
Arthur C. Wagner, Lebanon, Pa., assignor to Ace-In-The-Hole, Inc., Lebanon, Pa.
Filed Mar. 30, 1973, Ser. No. 346,448
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—272

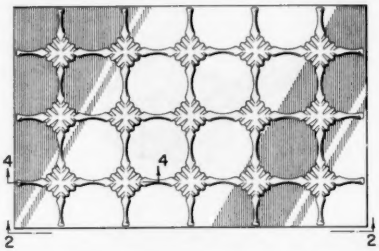
233,413
DISPENSING CONTAINER
Barbara C. Pietsch, Dallas, Tex., assignor to Bobbie Peach Enterprises, Inc., Dallas, Tex.
Filed Sept. 20, 1972, Ser. No. 290,475
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—30

233,414
TONER BOTTLE OR THE LIKE
Donald R. Avolio, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 30, 1973, Ser. No. 355,629
Term of patent 14 years
Int. Cl. D9—*67*
U.S. Cl. D9—67

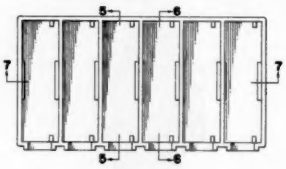
233,415
COMBINED BOTTLE AND CLOSURE THEREFOR
George Stock, Newdigate, near Dorking, England, assignor to Wilkinson Sword Limited, London, England
Filed Dec. 26, 1972, Ser. No. 317,591
Claims priority, application Great Britain June 28, 1972
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—160



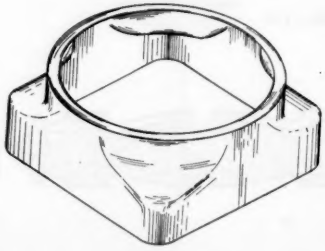
233,416
PACKING TRAY FOR CANS OR THE LIKE
George E. Jansen, Cedar Grove, N.J., assignor to The Pantasote Company, Passaic, N.J.
Filed Dec. 14, 1972, Ser. No. 315,143
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



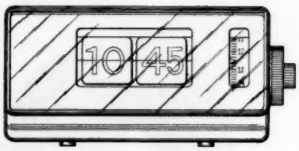
233,417
COMBINED PACKAGING AND DISPENSING TRAY FOR RAZOR BLADE UNITS
Edward E. Pomfret, Newbury, England, assignor to The Gillette Company, Boston, Mass.
Filed July 17, 1972, Ser. No. 272,204
Claims priority, application Great Britain Feb. 2, 1972
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—189



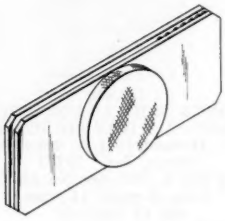
233,418
SKIRT FOR FROZEN FOOD PRODUCT CONTAINER
David F. Allgeyer, Conway, Ark., assignor to UMC Industries, Inc., New York, N.Y.
Filed June 14, 1972, Ser. No. 262,580
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—260



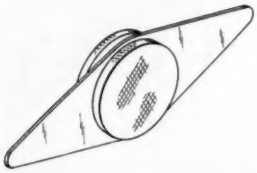
233,419
DIGITAL ALARM CLOCK
Dietrich Lubs, Frankfurt am Main, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Sept. 13, 1972, Ser. No. 288,601
Claims priority, application Germany May 5, 1972
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



233,420
BICYCLE REFLECTOR
Nicholas A. Amoroso, Hillsdale, N.J., assignor to Bright Star Industries, Inc., Clifton, N.J.
Filed Aug. 27, 1973, Ser. No. 392,049
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—111

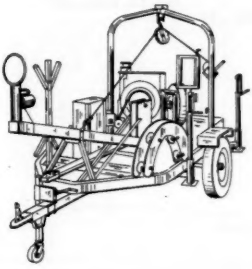


233,421
BICYCLE REFLECTOR
Nicholas A. Amoroso, Hillsdale, N.J., assignor to Bright Star Industries, Inc., Clifton, N.J.
Filed Aug. 27, 1973, Ser. No. 392,050
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—111



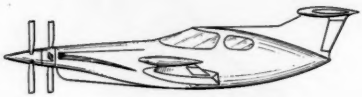
233,422
BICYCLE REFLECTOR
Nicholas A. Amoroso, Hillsdale, N.J., assignor to Bright Star Industries, Inc., Clifton, N.J.
Filed Oct. 9, 1973, Ser. No. 404,708
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—111

233,423
PIPE CABLE AND CONDUIT LAYING AND EXTRACTING DEVICE OR THE LIKE
William Maynard Slaughter, Rte. 3, Fuquay-Varina, N.C. 27526
Filed May 24, 1971, Ser. No. 146,581
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—56

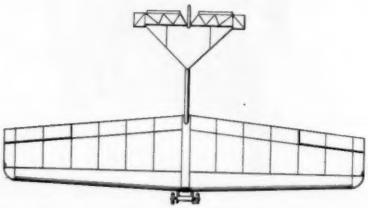


233,424
KAYAK
Klaus Lettmann, Duisburg-Laar, Germany, assignor to High Performance Products, Inc., Hingham, Mass.
Filed July 31, 1972, Ser. No. 276,691
Term of patent 14 years
Int. Cl. D12—*63*
U.S. Cl. D12—63

233,425
AIRPLANE
Ronald A. Duryea, Clearwater, Fla.
(423 Country Club Drive, Oldsmar, Fla. 33557)
Filed May 7, 1973, Ser. No. 357,637
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71

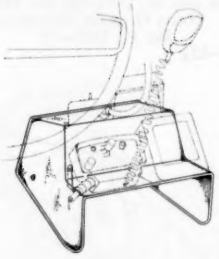


233,426
HANG GLIDER
Volmer S. Jensen, 1515 Ard Eevin, Glendale, Calif. 91202, and Irven H. Culver, 225 Redlands, Playa del Rey, Calif. 90291
Filed May 10, 1973, Ser. No. 359,025
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71

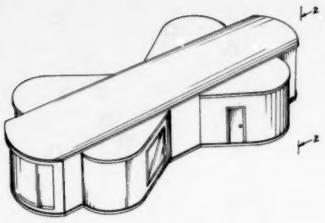


233,427
TIRE
Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France
Filed Jan. 22, 1973, Ser. No. 325,758
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

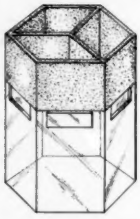
233,428
AUTOMOBILE MODULE FOR MOUNTING COMMUNICATION EQUIPMENT
Dow L. Hestand, 1401 W. Sunset Blvd., Odessa, Tex. 79763
Filed May 2, 1973, Ser. No. 356,640
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



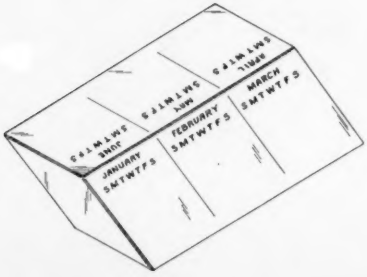
233,429
WINGED DWELLING STRUCTURE
William H. Buck-Pitt, 1831 E. Hayden Lane, Tempe, Ariz. 85281
Filed June 8, 1973, Ser. No. 368,235
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



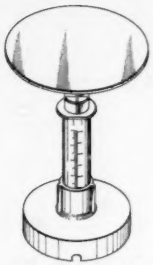
233,430
PENCIL WELL
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 28, 1972, Ser. No. 295,986
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—85



233,431
DESK CALENDAR OR SIMILAR ARTICLE
Henry Steiner, Hong Kong, assignor to The Dow Chemical Company, Midland, Mich.
Filed June 27, 1972, Ser. No. 266,689
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—20



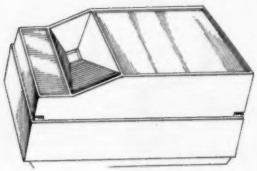
233,432
TEACHING AID FOR DEMONSTRATING PRINCIPLES OF PHYSICS
John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 26, 1972, Ser. No. 318,311
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



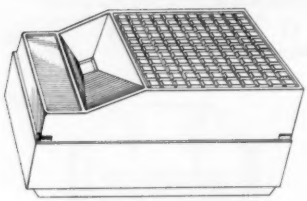
233,433
PRIMER TRAY
Fred A. Huntington, Oroville, Calif., assignor to RCBS Inc., Oroville, Calif.
Filed Aug. 4, 1972, Ser. No. 277,915
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—99

233,434
CATCH BASIN FILLER
John R. Ehmke, 6612 Champana, Florrisant, Mo. 63033
Filed July 10, 1972, Ser. No. 269,959
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1

233,435
CASING FOR SPRAY DISPENSER
Robert E. Kirby, Charlotte, N.C., assignor to General Time Corporation
Filed Nov. 5, 1973, Ser. No. 412,713
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—150

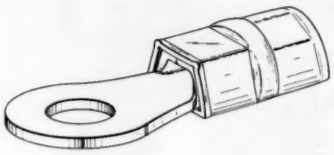


233,436
CASING FOR SPRAY DISPENSER
Robert E. Kirby, Charlotte, N.C., assignor to General Time Corporation
Filed Nov. 5, 1973, Ser. No. 413,049
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—150

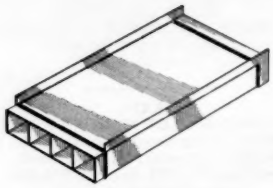


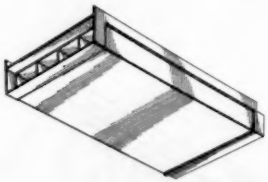
233,437
AUDIO VISUAL WORK DESK FOR DENTAL INSTRUCTION
David C. Jenkins and Lawrence M. Levin, Burlington, Ontario, Canada, assignors to Cox Systems Limited, Stoney Creek, Ontario, Canada
Filed July 24, 1972, Ser. No. 274,773
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B

233,438
TERMINAL CONTACT
Peter Martin Bruner, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Mar. 15, 1972, Ser. No. 235,096
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 E

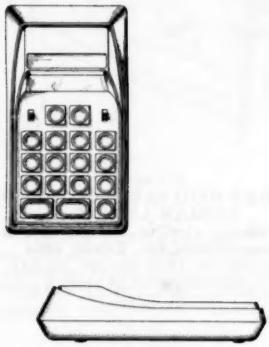


233,439
TELEPHONE DUCT
Lyle H. Mathews, Fullerton, Calif., assignor to Underground Devices, Inc., Elk Grove Village, Ill.
Filed Nov. 1, 1972, Ser. No. 302,768
Term of patent 14 years
Int. Cl. D13—*03;* D14—*99*
U.S. Cl. D26—5 B

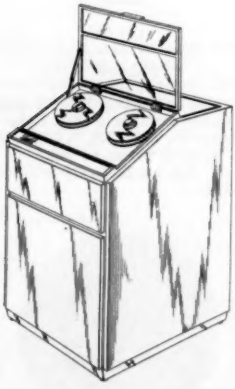




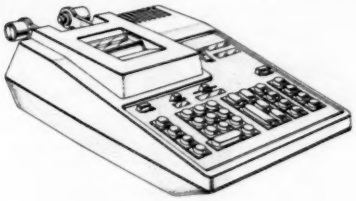
233,440
CALCULATOR
Gregory F. Fossella, Marshfield, Peter K. Rhoads, Stow, Larry R. Hoffman, Burlington, Alan Russell MacLeod, Chelmsford, and John W. Forrest, West Acton, Mass., assignors to Bowman Instrument Corporation, Fort Wayne, Ind.
Filed Mar. 22, 1973, Ser. No. 343,812
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



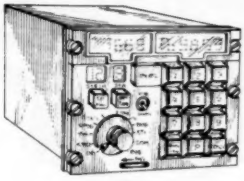
233,441
TAPE DRIVE UNIT OR THE LIKE
Thomas Cecil Laughon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of design application Ser. No. 338,702, Mar. 7, 1973. This application July 5, 1973, Ser. No. 376,769
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



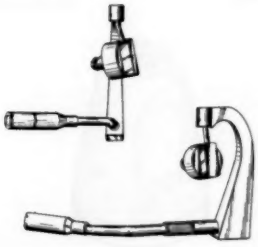
233,442
ELECTRONIC CALCULATOR
Yasuhiro Saito, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 18, 1973, Ser. No. 380,266
Claims priority, application Japan Jan. 23, 1973
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



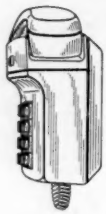
233,443
NAVIGATION CONTROL INSTRUMENT
Herman Anthony Lee, Dorval, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada
Filed June 19, 1972, Ser. No. 264,024
Term of patent 7 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C



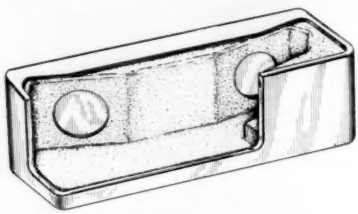
233,444
LIGHTWEIGHT HEADSET
Daniel H. Christian, Cornith, Miss., and George L. Payne, Bedford Hills, N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 1, 1973, Ser. No. 328,880
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H



233,445
WALL TELEPHONE SUBSCRIBER SET OR SIMILAR ARTICLE
Herbert Krämer, Furstenfeldbruck, and Herbert Hoher, Germering, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 26, 1973, Ser. No. 400,804
Claims priority, application Germany Mar. 28, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

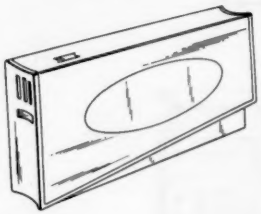


233,446
ACOUSTIC COUPLER OR SIMILAR ARTICLE
James S. MacConkey, Westerville, and David D. Tompkins, Columbus, Ohio, assignors to Esso Research and Engineering Company
Filed Jan. 9, 1974, Ser. No. 431,896
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



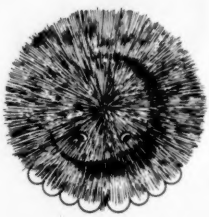
233,447
ASHTRAY
Arthur L. Fassauer, Canyon, Tex., assignor to Fassauer Industries, Inc., Canyon, Tex.
Filed May 7, 1973, Ser. No. 357,844
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—27

233,448
CIGARETTE LIGHTER
Georges Henri Joue, 24 Rue Berbier du Mets, 75013 Paris, France
Filed Dec. 8, 1972, Ser. No. 313,421
Claims priority, application France June 9, 1972
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36

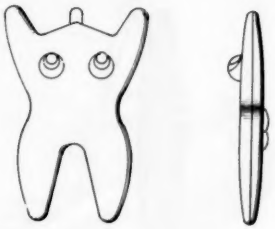


233,449
AMPOULE WITH PARTICLE TRAP OR SIMILAR ARTICLE
Otto Zauner, Vineland, N.J., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 18, 1973, Ser. No. 361,843
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D32—1

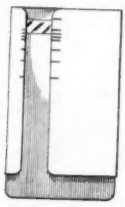
233,450
FUR DOLL
Sarah I. McLachlan and Wilbur D. McLachlan, both of Rt. 5, Box 628-B, Oklahoma City, Okla. 73108
Filed Oct. 19, 1972, Ser. No. 300,586
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



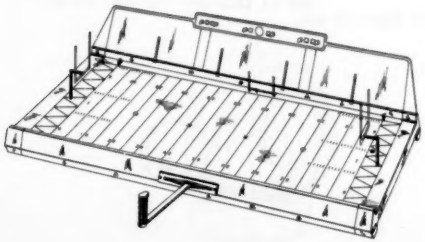
233,451
TOY FIGURE
Steven M. Chinn, 11304 NE. Oregon St. 97220, and Gloria J. Tyrer, 14722 NE. Glisan St. 97230, both of Portland, Oreg.
Filed Dec. 8, 1972, Ser. No. 313,438
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



233,452
GOLF RANGE FINDER
William Mayson, 4434 Patterdale Drive, North Vancouver, British Columbia, Canada
Filed Dec. 12, 1972, Ser. No. 314,431
Claims priority, application Canada June 13, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB

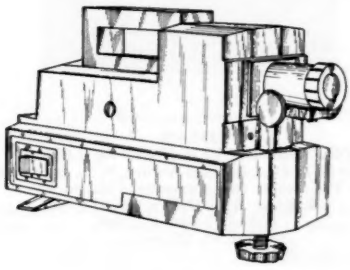


233,453
FOOTBALL GAME BOARD WITH CONTROL RODS
Donald Huffman, Westmount, Montreal, Canada, assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Jan. 26, 1973, Ser. No. 326,760
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 FG



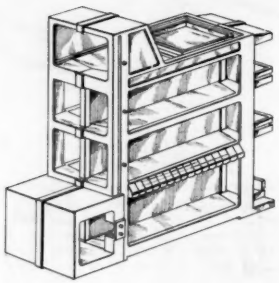
233,454
GOLF CLUB HEAD
Lloyd C. Winter, 1430 Cherrydale Drive, San Jose, Calif. 95125
Original design application Dec. 17, 1971, Ser. No. 209,510. Divided and this application July 16, 1973, Ser. No. 379,786
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

233,455
TOY MICROSCOPE
Mario de Matteo, Lanciano, Italy (Via Manzoni 31, Milan, Italy)
Filed Jan. 11, 1972, Ser. No. 217,080
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A

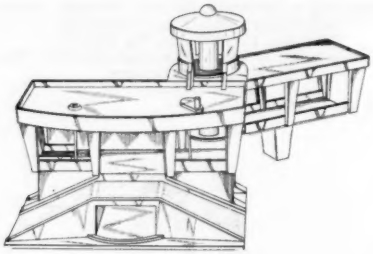


233,456
JOINT FOR A TOY FIGURE
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego, A.G., Zug, Switzerland
Filed Apr. 11, 1972, Ser. No. 243,119
Claims priority, application Denmark Oct. 15, 1971
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG

233,457
TOY MULTI-PURPOSE BUILDING
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed June 29, 1972, Ser. No. 267,319
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL

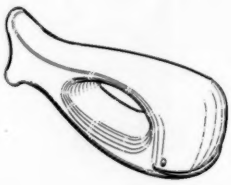


233,458
TOY AIRPORT TERMINAL BUILDING
Victor G. Reiling, Jr., East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 6, 1972, Ser. No. 312,589
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL

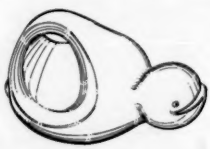


233,459
ROTATABLE WHEEL FOR EXERCISING
Albert P. Pellicore, 6952 W. Belmont Ave., Chicago, Ill. 60634
Filed Jan. 26, 1973, Ser. No. 326,678
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 G

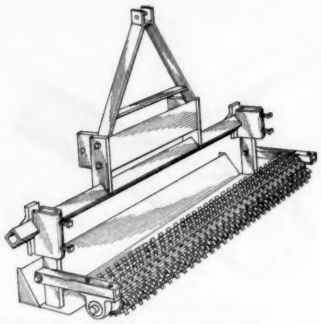
233,460
WHALE FIGURE TOY RATTLE
Michael Langieri, Butler, and Michael R. Meyers, Munsey, N.J., assignors to Questor Corporation, Toledo, Ohio
Filed Feb. 6, 1973, Ser. No. 330,171
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AG



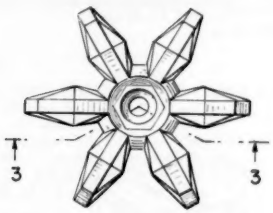
233,461
TURTLE FIGURE TOY RATTLE
Michael Langieri, Butler, and Michael R. Meyers, Munsey, N.J., assignors to Questor Corporation, Toledo, Ohio
Filed Feb. 6, 1973, Ser. No. 330,172
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AG



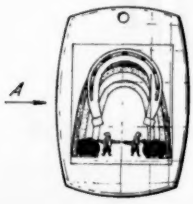
233,462
EARTH TREATING MACHINE
Manuel T. Barela, 715 Elm St.,
Fort Collins, Colo. 80521
Filed Nov. 10, 1972, Ser. No. 305,497
Term of patent 14 years
Int. Cl. D15—*03, 04*
U.S. Cl. D35—2 A



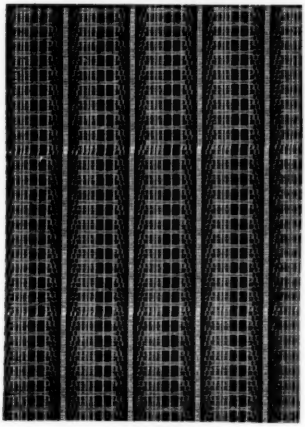
233,463
BEAD
Harold Roger, 370 1st Ave., New York, N.Y. 10010
Filed Feb. 26, 1973, Ser. No. 335,903
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 R



233,464
ORNAMENT FOR PERSONAL WEAR
Spencer Freeman, Hospital Buildings, Ballsbridge,
Dublin 4, Ireland
Filed Oct. 20, 1972, Ser. No. 300,410
Claims priority, application Great Britain Apr. 20, 1972
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl, D45—17

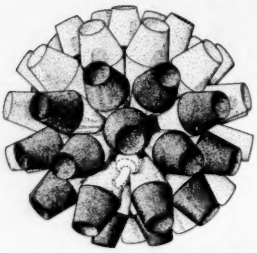


233,465
CURTAIN FABRIC
Peter E. Schroeder, Arni, Switzerland, assignor to
Gardisette International AG, Zurich, Switzerland
Filed Nov. 28, 1972, Ser. No. 310,101
Claims priority, application Switzerland June 23, 1972
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E

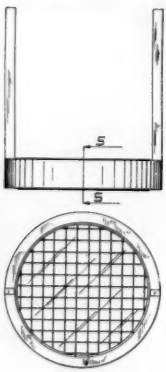


233,466
COMBINATION PEDESTAL SPEAKER AND LAMP
Arthur Robson, Jericho, N.Y., assignor to Morse Electro
Products Corp., Brooklyn, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,448
Term of patent 14 years
Int. Cl. D26—*05;* D14—*01*
U.S. Cl. D48—20 D

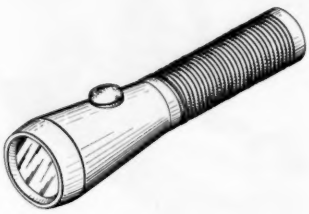
233,467
LAMP
Otis M. Coney, 131 Grove Terrace, Newark, N.J. 07106
Continuation-in-part of abandoned design application Ser. No. 166,335, July 26, 1971. This application Nov. 24, 1971, Ser. No. 202,063
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



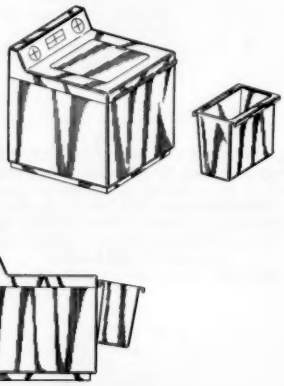
233,468
LIGHTING FIXTURE
Sylvan R. Shemitz, Woodbridge, Conn., assignor to Sylvan R. Shemitz and Associates, Inc., New Haven, Conn.
Filed Dec. 14, 1972, Ser. No. 315,131
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 A



233,469
FLASHLIGHT OR SIMILAR ARTICLE
Arthur H. Moore, Fairfield, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.
Filed Jan. 6, 1972, Ser. No. 215,986
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



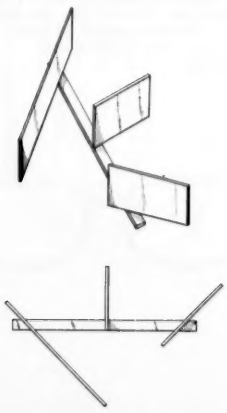
233,470
COMBINED CLOTHES WASHER AND HAMPER
Frank E. Hall, 223 Chestnut Ridge Road, Hubbard, Ohio 44425
Filed Mar. 22, 1972, Ser. No. 237,234
Term of patent 3½ years
Int. Cl. D15—*05*
U.S. Cl. D49—1 A



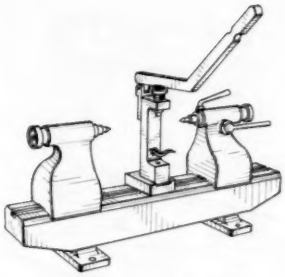
233,471
EDGE ATTACHMENT FOR A CARPENTER'S SQUARE OR THE LIKE
William E. Darlington, Granada Hills, Calif., assignor to F.P.I. Inc., North Hollywood, Calif.
Filed May 7, 1973, Ser. No. 357,825
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 A

233,472
ORAL THERMOMETER
Berel Weinstein, Sparta, and Zsigmond L. Sagi, Parsippany, N.J., and Frank W. Godsey, Jr., St. Petersburg, Fla., assignors to Bio-Medical Sciences, Incorporated, Fairfield, N.J.
Filed Jan. 8, 1973, Ser. No. 321,644
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R

233,473
WORKPIECE GUIDE FOR TABLE SAWS
James H. Nadeau, 271 Zion St., Hartford, Conn. 06106
Filed Apr. 14, 1972, Ser. No. 244,332
Term of patent 14 years
Int. Cl. D15—*09;* D8—*05*
U.S. Cl. D54—13 R

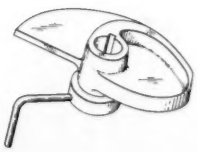


233,474
STRAIGHTENING AND ALIGNING FIXTURE FOR TURBO SHAFTS
Claude M. Harper, Westlake Village, Calif., assignor to Roto-Master, Inc., North Hollywood, Calif.
Filed Jan. 26, 1973, Ser. No. 327,608
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13 A

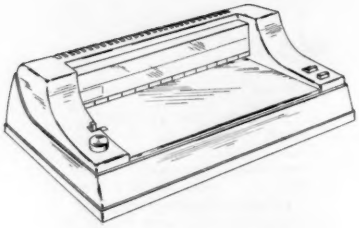


233,475
TUBE DEBURRING TOOL
Arthur H. Seflin, 6086 Cashio St., Los Angeles, Calif. 90035
Filed May 29, 1973, Ser. No. 364,525
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D54—4

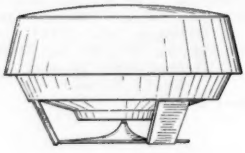
233,476
MEAT FEED ATTACHMENT FOR PORTION CONTROL IN A MOLDING MACHINE
Bernard Miles, 285 Vermont Ave., Irvington, N.J. 07111
Filed Mar. 30, 1972, Ser. No. 239,855
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 B



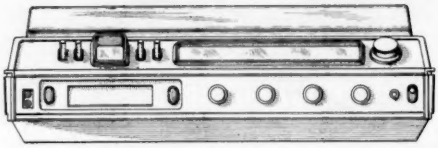
233,477
POWER-OPERATED PUNCH
Charles T. Grosswith III, Los Altos, Danilo P. Buan, Pleasanton, and David R. Estes, Mountain View, Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.
Filed Apr. 18, 1973, Ser. No. 352,087
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D55—1 A

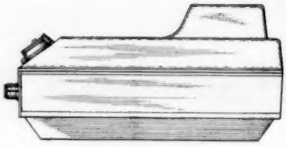


233,478
HOUSING FOR A PHONOGRAPH OR THE LIKE
Harvey K. McQuarrie and Michael D. Tate, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Oct. 31, 1972, Ser. No. 302,532
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



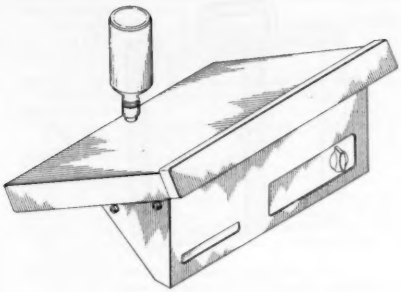
233,479
COMBINED RADIO RECEIVER AND TAPE CARTRIDGE PLAYER
Andrew Kainass, Syracuse, N.Y., assignor to General Electric Company
Filed Apr. 9, 1973, Ser. No. 349,130
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



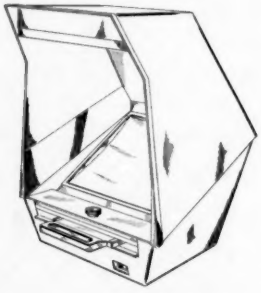


233,480
EYEGLASS FRAME FRONT
Howell Stevens Jobbins, Jr., Warwick, R.I., assignor to Universal Optical Company, Inc., Providence, R.I.
Filed Mar. 12, 1973, Ser. No. 340,075
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

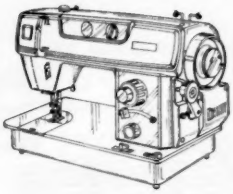
233,481
XEROGRAPHIC VAPOR FUSING UNIT
Ruediger W. Knodt, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 27, 1972, Ser. No. 301,704
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 Q



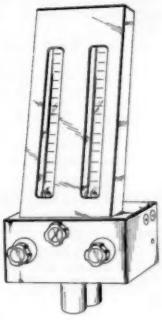
233,482
MICROFILM VIEWER
William A. Andres, Hopkins, Larry D. Quanrud, Minneapolis, Charles J. Koppa, Wayzata, Larry F. Becker and William K. Cristoffersen, Minneapolis, and James L. Keely, Wayzata, Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.
Filed Apr. 10, 1973, Ser. No. 349,776
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N

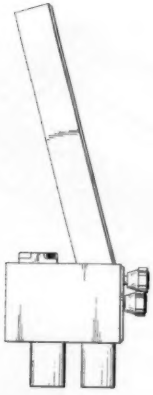


233,483
SEWING MACHINE
Tadashi Hirasawa, Takahiko Kasahara, and Masayuki Kato, Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Toyota, Aichi, Japan
Filed Nov. 14, 1972, Ser. No. 306,289
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1

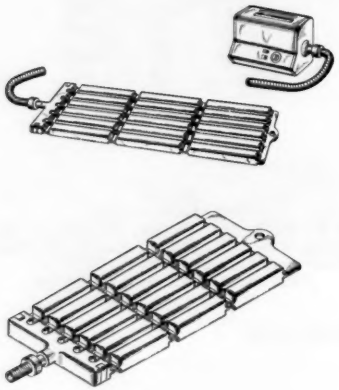


233,484
ANALGESIA UNIT
George K. Austin, Jr., P.O. Box 209, Rte. 2, Box 254, Newberg, Oreg. 97132, and Harvey M. Watt, 101 E. Greenwood Ave., Bend, Oreg. 97701
Filed Jan. 2, 1973, Ser. No. 320,129
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 G

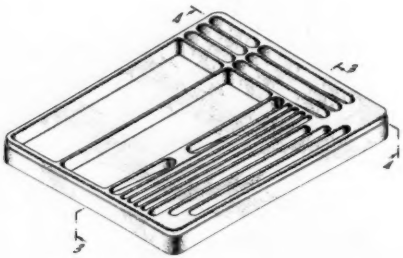




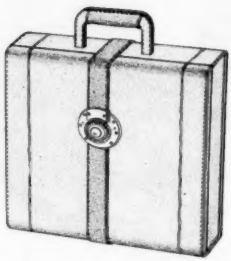
233,485
HYDROTHERAPY MASSAGE UNIT
Ruth Kulisch geb. Klages, Schwalbenstr. 7, 2902 Rastede, Germany
Filed July 5, 1973, Ser. No. 376,840
Claims priority, application Germany Jan. 5, 1973
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 C



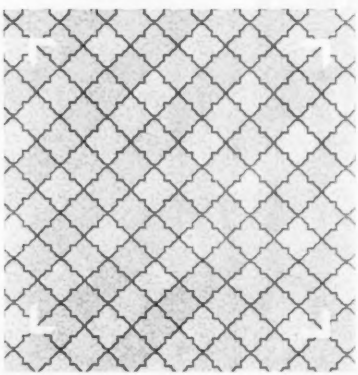
233,486
TRAY FOR HAIR STYLIST'S IMPLEMENTS
Ralph A. Gonzalez, 2114 Heloise Way, Placentia, Calif. 92670
Filed July 18, 1973, Ser. No. 380,454
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A



233,487
ATTACHE CASE
Robert J. Weir, New York, N.Y., assignor to Alfred Dunhill of London, Incorporated, New York, N.Y.
Filed Oct. 6, 1972, Ser. No. 295,424
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D89—5 B



233,488
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Robert D. Mansolillo, Bloomfield, N.J., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed Feb. 15, 1973, Ser. No. 332,778
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF OCTOBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abad, Maurice: *See—*
Sernatinger, Franz; and Abad, Maurice, 3,844,242.

Abbott, John. Hockey rink construction. 3,844,539, Cl. 256-24.000.

Abbott Laboratories: *See—*
Theriault, Robert John; Fager, Earl Elmer; and Wideburg, Norman Earl, 3,844,889.

Abex Corporation: *See—*
Jones, Roger D., 3,844,624.

Acker, Douglas B. Dump truck having an open shell in the shape of one-half of an ellipse. 3,844,616, Cl. 298-10.000.

Ackermann, Hans: *See—*
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Adams, Arnold G.: *See—*
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Adams, Gregory J. Motorcycle solo seat. 3,844,610, Cl. 297-213.000.

Addoms, John F.; and Culver, Donald W., to Aerojet General Corporation. Actively cooled anode for current-carrying component. 3,845,341, Cl. 313-32.000.

Addressograph-Multigraph Corporation: *See—*
Granzow, Daniel B.; Malloney, William R.; and Miles, William B., 3,845,239.

Adret-Electronique: *See—*
Rutman, Jacques, 3,845,396.

Aerojet General Corporation: *See—*
Addoms, John F.; and Culver, Donald W., 3,845,341.

Aga Aktiebolag: *See—*
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AGFA-Gevaert: *See—*
Willems, Jozef Frans; Poot, Albert Lucien; Heugebaert, Frans Clement; Vandenberghe, Anton Leon; and Von Konig, Anita, 3,844,797.

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Ohlschlager, Hans; Riester, Oskar; Gotze, Johannes; and Dorlars, Alfons, 3,844,798.
Puschel, Walter; Vetter, Hans; and Odenwalder, Heinrich, 3,844,785.
Puschel, Walter; Benoy, Gaston Jacob; and Kalz, Dietmar, 3,844,795.
Reister, Oskar; and Gesierich, Wolf, 3,844,782.

Ahern, William W., to Geometrics, Inc. Wall construction for spherical structures. 3,844,074, Cl. 52-81.000.

Ahlen, Karl Gustav, to S.R.M. Hydromekanik Aktiebolag. Quotient regulator for controlling hydrodynamic transmission. 3,844,120, Cl. 60-341.000.

Ahlgren, Ella Anita: *See—*
Zettergren, Birger; and Ahlgren, Hans Hjalmar, 3,844,359.

Ahlgren, Hans Hjalmar: *See—*
Zettergren, Birger; and Ahlgren, Hans Hjalmar, 3,844,359.

Air Products and Chemical, Inc., mesne: *See—*
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Air Products and Chemicals, Inc.: *See—*
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Air Techniques, Inc.: *See—*
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Airvert Limited: *See—*
Scott, Walter Roy; Scott, David Richard Howard; and Scott, Nigil Phillip, 3,844,335.

Aisin Seiki Kabushiki Kaisha: *See—*
Torii, Nozomu; and Furuya, Yoshikatsu, 3,844,596.

Ajinomoto Co., Inc.: *See—*
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Akinaga, Akito: *See—*
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Akiyama, Hiroshi: *See—*
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Akzona Incorporated, mesne: *See—*
Frank, Dieter; Brodowski, Walter; and Hentschel, Peter, 3,845,014.

Aladdin Industries, Incorporated: *See—*
Johnson, Craig A., 3,844,450.

Alaily, Jamil K., to GTE Automatic Electric Laboratories Incorporated. Sync pulse detector for video telephone system. 3,845,240, Cl. 178-7.30s.

Albers, Bernd G.: *See—*
Fisher, Howard M.; Albers, Bernd G.; and Luczak, Joseph J., 3,844,524.

Albert, Don E., to Phillips Petroleum Company. Apparatus and method for controlled liquid transfer. 3,844,683, Cl. 417-6.000.

Albright & Wilson Limited: *See—*
Collins, John Desmond; Coates, Harold; and Siddiqui, Iftikhar Hussain, 3,845,017.

Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, to American Home Products Corporation. Hydroxamic acid derivatives of 1-aminocyclohexane-carboxylic acid. 3,845,109, Cl. 260-500.50h.

Alcan Aluminumwerke GmbH: *See—*
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Surace, Filippo; Rogora, Edoardo; and Bassi, Aldo, 3,844,265.

Alfrey, Turner, Jr., to Dow Chemical Company, The. Apparatus and method for the prevention of evaporative loss of mixed organic liquids. 3,844,739, Cl. 55-74.000.

Allais, David C., to Interface Mechanisms, Inc. Multi-color printer utilizing rotating print cylinder. 3,844,210, Cl. 101-102.000.

Allbritton, William R. Hydraulic crushing machine. 3,844,209, Cl. 100-100.000.

Allen, Louis F.; and Ott, Joseph B., to Anglam, Inc. Fire extinguisher. 3,844,356, Cl. 169-31.00r.

Allied Chemical Corporation: *See—*
Bernardo, Anthony C., 3,845,012.
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Ringland, William L.; Neumann, Manfred E.; Kaeser, Ernst K.; Gilmore, Thomas P.; and Geiersbach, Allois F., 3,845,372.

Allison, Robert William, Jr., to Texas Instruments, Incorporated, mesne. Particle accelerator producing a uniformly expanded particle beam of uniform cross-sectioned density. 3,845,312, Cl. 250-398.000.

Alpert, Seymour B.: *See—*
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Alsruhe, Leonard U.: *See—*
Moores, Robert G., Jr.; McCafferty, Leo A., Jr.; and Alsruhe, Leonard U., 3,845,336.

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ALZA Corporation: *See—*
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American Cyanamid Company: *See—*
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American Standard Inc.: *See—*
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Ameurlaine, Jacques Francois; and Cohen-Solal, Gerard David, to Societe Anonyme de Telecommunications. HGTE-CDTE photovoltaic detectors. 3,845,494, Cl. 357-30.000.

AMF Incorporated: *See—*
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AMP Incorporated: *See—*
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Anania, James A. Cutter tool. 3,844,009, Cl. 29-97.000.

Anderson, Albert E.: *See—*
Green, Richard F.; Anderson, Albert E.; and Guarino, Alexander J., 3,844,360.

Anderson, Gail A., to Minesota Mining and Manufacturing Company. Wire connector. 3,845,236, Cl. 174-88.00r.

Anderson, Paul E., to Martin Marietta Aluminum, Inc. Method of producing continuous cast metallic sheet with patterned surface. 3,844,336, Cl. 164-277.000.

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Anderson, Robert Duwayne, to TCI, Inc. Hydraulic operated dumping spout and cover for side dump box. 3,844,615, Cl. 298-10.000.

Anderson, Robert G.; and Honnen, Lewis R., to Chevron Research Company. Hydrocarbyl amines for lubricating oil detergents. 3,844,958, Cl. 252-32.70e.

Anderson, Thomas E.; and Martzloff, Francois D., to General Electric Company. Integrated polycrystalline varistor surge protective device for high frequency applications. 3,845,358, Cl. 317-61.000.

Ando, Akio: *See—*
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Ando, Masaki, to Nippon Electric Company, Limited. Channel diplexer wherein coupling aperture balance and cancel out undesired modes. 3,845,415, Cl. 333-6.000.

Ando, Shizuo, to Pioneer Electronic Corporation. Telephone auto-answering device with record medium substitution. 3,845,248, Cl. 179-6.00r.

Andolph, James B.: *See—*
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Angermann, Manfred E., to Racine Duo-Guard, Inc. Combination casket and vault. 3,844,003, Cl. 27-35.000.

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Angle, Milton A.; Bender, George L.; Blair, Gerald E.; and Maier, Clarence C., to Eastman Kodak Company. Method and apparatus for transfer molding glass lenses. 3,844,755, Cl. 65-32.000.

Angstadt, Howard P. Process for vapor phase ammoxidation. 3,845,094, Cl. 260-465.00c.

Antonen, Robert C., to Dow Corning Corporation. Fast cure organopolysiloxane resins. 3,844,992, Cl. 260-18.00s.

Aoki, Teiji. Audio-visual cartridge and player. 3,844,643, Cl. 352-78.00r.

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Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, 3,844,907.

APL Corporation: *See—*
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Arnold, Franz. Machine vise. 3,844,549, Cl. 269-247.000.

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Aronstein, Jesse; Harding, William E.; and Zeiss, Philip M., to International Business Machines Corporation. Manufacturing control system for processing workpieces. 3,845,286, Cl. 235-151.100.

Arpe, Hans-Jurgen: *See—*
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Atkins, Francis James, to Associated Engineering Limited. Retroreflectors. 3,844,635, Cl. 350-104.000.

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Atlantic Richfield Company: *See—*
Lindwall, Richard C.; and Crocker, Richard E., 3,845,317.
Sauer, Richard W.; and Russell, Donald H., 3,844,862.
Wunderlich, Donald K.; and Skinner, James L., 3,844,929.
Wunderlich, Donald K.; and Skinner, James L., 3,844,930.

Audicom Corporation: *See—*
Crosby, Murray G., 3,845,391.

Aulisa, Gerard D., to Sun Oil Company of Pennsylvania. Rotary skimmer. 3,844,950, Cl. 210-170.000.

Austin, Alfred E., to Du Pont de Nemours, E. I., and Company. Polynary germanides and silicides. 3,844,775, Cl. 75-134.00f.

Autoipari Kutato Intezet: *See—*
Szekely, Laszlo, 3,844,385.

Automation Industries, Inc.: *See—*
Di Leo, Christopher C., 3,844,163.

Auxier, Thomas A.: *See—*
Sterman, Albert P.; Solda, Robert B.; and Auxier, Thomas A., 3,844,678.

Avco Corporation: *See—*
Matto, Lawrence R., 3,844,116.

Avcon, Inc.: *See—*
French, Robert L., 3,845,289.

Ayerst, McKenna & Harrison, Limited: *See—*
Deslongchamps, Pierre, 3,845,124.

B & C Industries, Inc.: *See—*
Clarady, Leroy E.; McSweeney, J. Jay; and Smith, Joe H., 3,845,374.

Babbs, Frederick William, to Cox of Watford Limited. Seat cushion. 3,844,614, Cl. 297-452.000.

Babcock & Wilcox Company, The: *See—*
Flais, Louis R.; and McIlroy, Robert A., 3,844,879.

Babcock, Richard D.: *See—*
Giardina, Nicholas; Gervis, Melvyn A.; Wozny, Eugene Taras; and Babcock, Richard D., 3,844,592.

Bachmann, Horst: *See—*
Schneider, Hans-Dieter; and Bachmann, Horst, 3,845,238.

Bachmann, Horst, to Langenstein & Schemann Aktiengesellschaft. Machine for applying force. 3,844,157, Cl. 72-452.000.

Bachmann, Peter, to Ebauches Bettlach S.A. Mechanical watch movement. 3,844,108, Cl. 58-59.000.

Bader, Erich; and Amann, Herbert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the copolymerization of trioxane with C-O-C groups-containing compounds. 3,845,160, Cl. 260-823.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Bartholome, Ernst; Koehler, Waldemar; Stoeckelmann, Guenter; Schulz, Gerhard; Nagel, Otto; Goetze, Walter; Kasper, Werner; Dreher, Erich; and Dahlinger, Roland, 3,845,144.
Daeuble, Manfred; Oppenlaender, Kurt; and Fikentscher, Rolf, 3,844,711.
Graser, Fritz, 3,845,080.
Hoffmann, Werner; and Rischer, Roman, 3,845,135.
Krabetz, Richard; and Engelbach, Heinz, 3,845,120.
Lebkuecher, Rolf; Koenig, Horst; Amann, August; Giertz, Hubert; and Schuster, Joerg, 3,845,050.

Reicheneder, Franz; Kropp, Rudolf; and Fischer, Adolf, 3,845,054.
Willersinn, Carl-Heinz; and Reicheneder, Franz, 3,844,903.

Baganoff Associates, Inc.: *See—*
Baganoff, Frederick, 3,844,659.

Baganoff, Frederick, to Baganoff Associates, Inc. Strain gauge data reduction apparatus and methods. 3,844,659, Cl. 356-32.000.

Bagheri, Mansour A. H.; and Stillman, Donald W., to Long Lok Fasteners Corporation. All metal self-locking screw fastener. 3,843,984, Cl. 10-10.00r.

Bahder, George; and Katz, Carlos, to Phelps Dodge Industries, Inc. Prefabricated capacitive graded splice device. 3,845,235, Cl. 174-73.00r.

Bailey, Leonard R., to Case, J. I., Company. Backhoe mounting arrangement. 3,844,425, Cl. 214-131.00a.

Bailey Meter Company: *See—*
Fisher, Edward W., 3,845,443.
Riley, John E., 3,845,348.

Bailey, Raymond E.; and Kreckel, Douglas A., to Xerox Corporation. Dynamic bath control process. 3,844,906, Cl. 204-9.000.

Bajars, Laimonis: *See—*
Croce, Louis J.; and Bajars, Laimonis, 3,845,153.

Baker, Bernard, to Energy Research Corporation. Modular battery construction. 3,844,841, Cl. 136-111.000.

Baker, Theodore C.: *See—*
Schmersal, Larry J.; Baker, Theodore C.; and Murley, M., 3,845,243.

Balche-Durr Aktiengesellschaft: *See—*
Kliemann, Siegfried; and Vodicka, Vladimir, 3,844,344.

Baldwin, Mart G.; and Reed, Samuel F., Jr., to United States of America, Army, mesne. Method for preparing hydroxy-terminated copolymers of butadiene and acrylate. 3,845,139, Cl. 260-606.50b.

Bales, Russell C., Sr. Thermally controlled water regulator. 3,844,476, Cl. 236-12.00r.

Ball, Donald F., to Keep Rite Products Limited. Sliding window filler unit for air conditioners. 3,844,204, Cl. 98-94.000.

Ballinger, Dale O., to Honeywell Inc. Apparatus for orienting magnetic particles having a fixed and varying magnetic field component. 3,845,499, Cl. 360-56.000.

Balls, Dean M., to Dow Chemical Company, The. Preparation of symmetrical 4-(dialkylamino) phenols. 3,845,063, Cl. 260-293.840.

Balogh, Roy, to McCabe-Powers Body Company. Control system for an aerial device. 3,844,378, Cl. 182-141.000.

Baltimore Aircoil Company, Inc.: *See—*
Morris, John Henry, 3,844,682.

Bangs, Leigh B.: *See—*
Layne, Gilbert S.; Bangs, Leigh B.; and Huml, James O., 3,844,771.

Banko, Anton. Surgical instruments. 3,844,272, Cl. 128-2.00b.

Barandon, Rene: *See—*
Sol[illegible], Jean-Pierre; Lambert, Andre; and Barandon, Rene, 3,644,307.

Barber, Ernest C., to Texaco Inc. Process for air pollution abatement. 3,844,942, Cl. 210-50.000.

Barish, Benjamin J. Educational game relating to computers. 3,844,564, Cl. 273-134.00a.

Barker, Perley K.: *See—*
Gianni, Sebastian J.; Seeley, William M.; Stillson, Timothy Jay; Hamilton, Clark B.; and Barker, Perley K., 3,844,131.

Barlett, William John; and Boniface, Frederick George, to Roto-Finish Limited. Apparatus for vibratory finishing. 3,844,071, Cl. 51-163.000.

Barlow, Harold Everard Montcagle, to National Research Development Corporation. Dipole mode electromagnetic waveguides. 3,845,426, Cl. 333-95.00s.

Barnes Drill Co.: *See—*
Greenberg, Donald K., 3,844,546.

Baronnet, Rene, to Societe Berri-Balzac. Terpene derivatives. 3,845,048, Cl. 260-247.70e.

Barr and Stroud Limited: *See—*
Punctman, Herbert Morrison, 3,845,298.

Barrett, Harrison H.: *See—*
Holland, Melvin G.; Schulz, Manfred B.; and Barrett, Harrison H., 3,845,420.

Bartholome, Ernst; Koehler, Waldemar; Stoeckelmann, Guenter; Schulz, Gerhard; Nagel, Otto; Goetze, Walter; Kasper, Werner; Dreher, Erich; and Dahlinger, Roland, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of propylene chloroydrin. 3,845,144, Cl. 260-634.000.

Barton, Derek Harold Richard; and Hesse, Robert Henry, to Research Institute for Medicine and Chemistry Inc. Protection of steroid carbonyl group by enolisation. 3,845,040, Cl. 260-239.55d.

Basset, Jean-Claude, to U.S. Philips Corporation. Communication receiver with tuning circuits that tracking the L.O. 3,845,393, Cl. 325-453.000.

Bassi, Aldo: *See—*
Surace, Filippo; Rogora, Edoardo; and Bassi, Aldo, 3,844,265.

Bates, James E.; Farren, Francis J.; and Sklute, Jerome, to GAF Corporation. Composite film elements. 3,844,789, Cl. 96-68.000.

Batson, William A., to Singer Company, The. Power-driven chain saw with automatic and manual lubricating pump. 3,844,380, Cl. 184-15.00r.

Battelle Memorial Institute: *See—*
Luscher, Jakob, 3,845,331.

Bauerle, Kurt, to Moser, Kuno, GmbH, Firma. Pivotally mounted long hair trimmer. 3,844,035, Cl. 30-43.920.

Baugham, Thomas C.: *See—*
Harrill, Joseph M.; Baugham, Thomas C.; and Pruitt, Eugene, 3,844,497.

Baum, Jesse J. Direct reduction method using inductive heating. 3,844,765, Cl. 75-10.00r.

Baumgartner, Wayne, Sr.: *See—*
Habert, William C.; Baumgartner, Wayne, Sr.; and Brown, Robert J., 3,844,871.

Baxendale, John W.: *See—*
Hale, Lloyd R.; and Baxendale, John W., 3,844,394.

Baychem Corporation: *See—*
Chadwick, David H.; and Reetz, Theodor, 3,845,019.

Bayer Aktiengesellschaft: *See—*
Buchner, Werner; Noll, Walter; Reich, Friedrich; Kortmann, Wilfried; and Pfeiffer, Josef, 3,844,826.
Hess, Bernhard; Raichle, Karl; Rudolph, Hans; and Fuhr, Karl, 3,845,162.
Hofer, Wolfgang, 3,845,170.
Hoffmann, Hellmut; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 3,845,207.
Kempermann, Theo; Eholzer, Ulrich; Westlinning, Hermann; and Fleischhauer, Horst, 3,844,970.
Kloker, Werner; and Beckers, Johannes, 3,844,995.
Nouvertne, Werner; Muller, Peter Rolf; Peilstocker, Gunter; and Vernaleken, Hugo, 3,845,007.
Schafer, Werner; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., 3,845,069.
Sirrenberg, Wilhelm; Behrenz, Wolfgang; Hammann, Ingeborg; and Homeyer, Bernhard, 3,845,174.
Walz, Klaus; Hees, Walter; and Quaedvlieg, Mathieu, 3,845,113.
Zumach, Gerhard; Kuhle, Engelbert; and Hammann, Ingeborg, 3,845,103.

Bayle, Robert Vincent, to Gemmer France. Rack and pinion assembly. 3,844,181, Cl. 74-498.000.

Beale, Alvin F., Jr., to Dow Chemical Company, The. Preparation of N,N'-diethanol piperazine. 3,845,059, Cl. 260-268.50y.

Bean, Kenneth E., to Texas Instruments Incorporated. Process for controlling the thickness of a thin layer of semiconductor material and semiconductor substrate. 3,844,858, Cl. 156-17.000.

Beatrice Foods Co.: *See—*
Koziol, Walter, 3,845,292.

Bechstein, Ernest L.; and Cronauer, Donald C., to Borg-Warner Corporation. Process of dehydrohalogenation of alpha, beta-dihalogenated propionic acid compounds. 3,845,095, Cl. 260-465.700.

Becker, Carl: *See—*
Wegmann, Jacques; and Becker, Carl, 3,844,806.

Beckers, Johannes: *See—*
Kloker, Werner; and Beckers, Johannes, 3,844,995.

Beecham Group Limited: *See—*
Harnden, Michael Raymond, 3,845,033.

Beek, Joseph A.: *See—*
Hosick, Charles L.; and Beek, Joseph A., 3,845,465.

Beers, Melvin D., to General Electric Company. Curable compositions. 3,845,161, Cl. 260-825.000.

Beggs, Donald, to Medrex Corporation. Process for the continuous passivation of sponge iron particles. 3,844,764, Cl. 75-.50r.

Beggs, Donald, to Midland-Ross Corporation. Process for reducing iron oxide to metallic sponge iron with liquid or solid fuels. 3,844,766, Cl. 75-35.000.

Beguin, Rene. Erasable trace recorder. 3,845,491, Cl. 346-21.000.

Behrenz, Wolfgang: *See—*
Hoffmann, Hellmut; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 3,845,207.
Sirrenberg, Wilhelm; Behrenz, Wolfgang; Hammann, Ingeborg; and Homeyer, Bernhard, 3,845,174.

Belkovicz, John A.; and Mullen, Ernald F. Loading machine. 3,844,370, Cl. 180-73.00r.

Bell & Howell Co.: *See—*
Marcot, Guy G., 3,845,198.

Bell & Howell Company: *See—*
Gilsdorf, Richard C.; and Tout, Stanley D., 3,844,647.
Morrison, Wilbur J., 3,844,551.

Bell Telephone Laboratories, Incorporated: *See—*
Indig, George Sanford; and Rentzepis, Peter Michael, 3,845,294.
Kaiser, Peter, 3,844,752.
Le Craw, Roy Conway; Levinstein, Hyman Joseph; and Wolfe, Raymond, 3,845,477.
Yahalom, Joseph, 3,844,904.

Bellasio, Aldo, to Industrie Pirelli Societa Per Azioni. Monitoring device for monitoring the supply of filaments and/or tapes to electric cable stranding machines. 3,845,323, Cl. 307-120.000.

Beloit Corporation: *See—*
Sokolow, Nickolas N., 3,844,700.

Beloit-Passavant Corporation: *See—*
Sellers, H. Charles, Jr.; and Hatchel, Ronnis J., 3,844,399.

Bender, George L.: *See—*
Angle, Milton A.; Bender, George L.; Blair, Gerald E.; and Maier, Clarence C., 3,844,755.

Bender, Ray C. Solar energy helmet. 3,844,840, Cl. 136-89.000.

Bendix Corporation, The: *See—*
Cole, Judson C.; and Hall, James R., 3,845,450.
Ditlinger, Richard J.; and Brooks, Peter, 3,844,388.

Eifler, Raymond J., 3,845,452.
Hemmer, Valentine J., 3,845,453.
Hooton, Norris A., 3,844,800.
Kutash, Richard A., 3,844,022.
Normann, Richard W., 3,845,459.
Sawicki, Joseph J.; and Talbert, Charles D., 3,845,484.

Benedict, Risque L., to Esso Production Research Company. Anode containing pin-type inserts. 3,844,921, Cl. 204-196.000.

Beneke Davison, Beatrice Foods Co.: *See—*
Harrison, David E., 3,845,183.

Beninate, John V.: *See—*
Reeves, Wilson A.; Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; and Beninate, John V., 3,844,824.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; and Fernandez, Manuel, 3,844,061.

Bennion, Douglas N.; Dunning, John S.; Tiedemann, William H.; and Hsueh, Limin, to United States of America, Navy. Nonaqueous battery. 3,844,837, Cl. 136-6.0ln.

Benoy, Gaston Jacob: *See—*
Puschel, Walter; Benoy, Gaston Jacob; and Kalz, Dietmar, 3,844,795.

Benz, Mark G., to General Electric Company. Large grain cobalt-samarium intermetallic permanent magnet material and process. 3,844,850, Cl. 148-103.000.

Beondu A. G., mesne: *See—*
Giesen, Gerardus Johannes, 3,844,255.

Berg, Markus: *See—*
Fries, Walter; Berg, Markus; and Dohr, Manfred, 3,844,951.

Berger, Abe; and Selin, Terry G., to General Electric Company. Hydrazones of carbonyl compounds containing an omega alkene moiety. 3,845,127, Cl. 260-566.00b.

Berger, Klaus; and Scheunemann, Horst, to Berthold, H., A.G. Article supporting structure. 3,844,521, Cl. 248-429.000.

Bergvall, Knut Lennart; and Dehlberg, Ernst Erik, to Interco Aktiebolag. Outer wall structure of prefabricated wall elements. 3,844,081, Cl. 52-235.000.

Beriger, Ernst. O-Ethyl-S-n propyl-S-carbamoylalkyl dithiophosphates. 3,845,171, Cl. 260-943.000.

Berkowitz, Lewis M.: *See—*
Epstein, Joseph; and Berkowitz, Lewis M., 3,844,905.

Berkowitz, Milton. Hanger for fabric and supporting assembly therefor. 3,844,499, Cl. 242-55.000.

Bernard, Nicole: *See—*
Chiron, Bernard; Rannou, Claude; and Bernard, Nicole, 3,845,413.

Bernardo, Anthony C., to Allied Chemical Corporation. Flame retardant polymer compositions. 3,845,012, Cl. 260-45.75b.

Bernhardson, Rune Bernard; Lundfeldt, Karl Lennart; and Ullerfors, Karl-Erik, to Telefonaktiebolaget Ericsson, L. M. Method and system for detecting wheel flats on rail vehicles. 3,844,513, Cl. 246-169.00r.

Berther, Clau: *See—*
El-Ghatta, Hussain; Lussi, Heinz; Berther, Clau; and Hoppe, Manfred, 3,844,971.

Berthold, H., A.G.: *See—*
Berger, Klaus; and Scheunemann, Horst, 3,844,521.

Bertin & Cie Plaisir: *See—*
Croix-Marie, Francis Marie Jean; Bonnat, Christian Pierre; and Morel, Jean-Pierre Georges Denis, 3,844,218.

Bertness, Theodore A.: *See—*
Snavely, Earl S., Jr.; and Bertness, Theodore A., 3,844,349.

Besenmatter, Walter: *See—*
Gela, Helmut; Besenmatter, Walter; Scheiber, Robert; Schneider, Fritz; and Rothy, Gerhard, 3,844,658.

Bessett, Clifford H.; and Boyd, James W., to Packaging Corporation of America. Pouring sprue. 3,844,337, Cl. 164-412.000.

Betancourt L., Victor Manuel. Dual pneumatic tire casings. 3,844,325, Cl. 152-158.000.

Bethea, Tristram Walker; and Halasa, Adel Farhan. Method of increasing molecular weight of polymer. 3,845,028, Cl. 260-85.100.

Bethlehem Steel Corporation: *See—*
Shaffer, Robert S.; and Caldwell, Laurence B., 3,844,820.

Betteridge, John Francis, to C.A.V. Limited. Turbo superchargers for internal combustion engines. 3,844,676, Cl. 415-156.000.

Bettoli, Phillips S.; and Erb, Edward R., to General Aniline & Film Corporation. Foamed decorative covering material and method of manufacture. 3,844,814, Cl. 117-11.000.

Betts, Joseph Ellwood; and Martens, Stanton Curry, to General Electric Company. Curable composition comprising polyvinyl chloride, a chlorinated polyolefin and an ethylene polymer, and the cured product thereof. 3,845,166, Cl. 260-897.00c.

Betz Laboratories, Inc.: *See—*
Brink, Robert H., Jr.; Shema, Bernard F.; and Swered, Paul, 3,845,216.

Beutel, Jacob: *See—*
Chang, Catherine Teh-Lin; Sheeto, Joseph John, Jr.; and Beutel, Jacob, 3,844,790.

Bevilacqua, Frank; and Groves, Malcolm D., to Combustion Engineering, Inc. Lift piston assembly. 3,844,882, Cl. 176-36.00r.

Bevilacqua, Frank; Groves, Malcolm D.; and Notari, Gennaro V., to Combustion Engineering, Inc. Pressure vessel penetration techniques. 3,844,883, Cl. 176-36.00r.

Bevilacqua, Frank; Flinn, William S.; and Groves, Malcolm D., to Combustion Engineering, Inc. Isolation valve and control system employing the same. 3,844,884, Cl. 176-36.00r.

Bew, Rudolph V.; Walters, Anderson J.; Funk, Donald J.; and Frazier, Joseph R., Jr., to Reynolds Metals Company. Method of making a slug having controlled grain direction. 3,844,155, Cl. 72-356.000.

Beyer, Horst: *See—*
Sedlatschek, Karl; Heitzinger, Friedrich; Beyer, Horst; and Buran, Ulrich, 3,844,729.

Beyerle, Rudi: *See—*
Stachel, Adolf; Beyerle, Rudi; Kunze, Wilhelm; Nitz, Rolf-Eberhard; and Scholtholt, Josef, 3,845,052.

Biasotti, Joseph B.; and Oberender, Frederick G., to Texaco Inc. Motor fuel additive. 3,844,731, Cl. 44-66.000.

Biebuyck, Lawrence F.: *See—*
Hubbard, S. Eugene; and Biebuyck, Lawrence F., 3,844,084.

Bienenfeld, Arthur: *See—*
Kaufman, Lawrence L.; and Bienenfeld, Arthur, 3,844,757.

Bierley, Howard L.; and Witmer, Phares B., III, to Frick Company. Double conveyor contact freezer. 3,844,133, Cl. 62-341.000.

Billion, Leo Josef Maria. Monitor circuit. 3,845,363, Cl. 317-136.000.

Bilow, Norman; Landis, Abraham L.; and Miller, Leroy J., to Hughes Aircraft Company. Acetylene substituted polyimide oligomers. 3,845,018, Cl. 260-47.00c.

Bilstein, August, Firma: *See—*
Keilholz, Friedrich, 3,844,544.

Bimshas, John, Jr.; and Hickey, Edward S., to United States of America, Navy. Rotatable finned heat transfer device. 3,844,341, Cl. 165-86.000.

Bingham, Joseph P. Fluidic pump. 3,844,622, Cl. 302-45.000.

Bio-Logics Products, Inc., mesne: *See—*
Davis, William P.; and Jensen, Billy M., 3,844,396.

Bioware, Inc.: *See—*
Cawley, Leo P., 3,844,918.

Birch, Arthur I.; and Brown, Darrell E. Tracheotomy device. 3,844,290, Cl. 128-351.000.

Birchenough, John Peacock, to Plessey Handel und Investments AG. Doppler microwave landing systems. 3,845,486, Cl. 343-106.00d.

Birk, James R.: *See—*
Yosim, Samuel J.; McKenzie, Donald E.; Grantham, Leroy E.; and Birk, James R., 3,845,190.

Birkett, Christopher B.; and Epstein, Barry D., to General Atomic Company, mesne. Self-cleaning optical cell for a fluid analysis system. 3,844,661, Cl. 356-184.000.

Birtley Engineering Limited: *See—*
Jordison, Fred, 3,844,414.

Bischoff, Gottfried, Bau Kompl. Gasreinigungs- und Wasserruckkuhlanlagen Kommanditgesellschaft: *See—*
Hausberg, Gerhard; and Hegemann, Karl-Rudolf, 3,844,744.

Biscoff, Gottfried, Bau Kompl. Gasreinigungs-und Wasserruckkuhlanlagen Kommanditgesellschaft: *See—*
Hausberg, Gerhard; and Hegemann, Karl-Rudolf, 3,844,745.

Biskup, John: *See—*
Petry, Robert K.; Biskup, John; and Murphy, Robert E. J., 3,845,182.

Bissell Inc.: *See—*
DeMaagd, Donald R., 3,843,989.
Yonkers, Robert A., 3,844,033.

Bjerke, Harold Chr., to Elkem-Spigerverket A/S. Method and apparatus for inspection of ferro-magnetic billets. 3,845,383, Cl. 324-38.000.

Bjork, Robert M.; and Bjork, Steven Robert. Boot for camper-truck combination. 3,844,603, Cl. 296-23.0mc.

Bjork, Steven Robert: *See—*
Bjork, Robert M.; and Bjork, Steven Robert, 3,844,603.

Black and Decker Manufacturing Company, The: *See—*
Moores, Robert G., Jr.; McCafferty, Leo A., Jr.; and Alsruhe, Leonard U., 3,845,336.

Black, Ernest P., to Sun Research and Development Company. Method of preparing thermoset polymer coated-wax impregnated cellulosic stock. 3,844,829, Cl. 117-155.00l.

Black, Harry G.: *See—*
Black, Harry G.; and Christenson, Lowell B. (said Christenson assor. to said), 3,844,241.

Black, Harry G.; and Christenson, Lowell B., said Christenson assor. to said Black, Harry G. Auxiliary flotation for reducing the draft of ships. 3,844,241, Cl. 114-123.000.

Black, Robert B. Energy conversion system. 3,844,270, Cl. 126-110.00r.

Blair, Gerald E.: *See—*
Angle, Milton A.; Bender, George L.; Blair, Gerald E.; and Maier, Clarence C., 3,844,755.

Blakeley, Clyde A.; and Morgan, Joe M., to Fabit Corporation. Refuse container loading and transport assembly. 3,844,434, Cl. 214-731.000.

Blanke, Martin; and Hass, Karl, to Dynamit Nobel Aktiengesellschaft. Aluminum oxide material for lining the floors and skidways of pusher-type reheating furnaces. 3,844,803, Cl. 106-65.000.

Blanshine, Allison W.; Eggers, Edward T.; and Hyman, Myles, to Sperry Rand Corporation. Hay roll forming machine. 3,844,208, Cl. 100-88.000.

Bleau, Charles D.; Rogers, James C.; and Spears, Jesse W., to International Business Machines Corporation. Document feed device. 3,844,552, Cl. 271-245.000.

Blinkilde, Paul J., to Essex International, Inc. Occupant sensor seat switch with deformable conductive spacer pads. 3,845,261, Cl. 200-85.00a.

Bliss, Woodrow E., Jr., to Pittsburgh-Des Moines Steel Company. Protected offshore storage facility. 3,844,122, Cl. 61-1.000.

Block, Hans-Jurgen; Greve, Heinz; and Zessin, Horst, to Hauni-Werke Korber & Co. KG. Apparatus for producing filter rods or the like. 3,844,199, Cl. 93-1.00c.

Blood, Alden E.: *See—*
Hagemeyer, Hugh J., Jr.; Blood, Alden E.; and Snapp, Thomas C., Jr., 3,845,106.

Bloom, Melvin S.; and Fico, Sally S., to Eastman Kodak Company. Photosensitive material comprising polyacetylenic amine salts. 3,844,791, Cl. 96-88.000.

Blue, J. E.; and Pruitt, J. G., to United States of America, Navy. Sonar signal processing and display technique. 3,845,462, Cl. 340-3.00r.

Blum, Marshall R. Container with removable pump. 3,844,452, Cl. 222-321.000.

Blum, Paul, to Transnucleaire, Societe pour les Transports de l'Industries Nucleaire. Packaging for the transportation of radioactive materials. 3,845,315, Cl. 250-506.000.

Blunden, Donald J.; and Peisner, Israel D., to Whitehead & Kales Company. Tie-down system for rail cars. 3,844,228, Cl. 105-36.0bt.

Blurton, Leon C.; and Cina, Saverio J., to Global Marine Inc. Air cushion vehicle. 3,844,126, Cl. 61-46.500.

Bobkowicz, Andrew John: *See—*
Bobkowicz, Emilian; and Bobkowicz, Andrew John, 3,844,097.

Bobkowicz, Emilian; and Bobkowicz, Andrew John. Composite spinning. 3,844,097, Cl. 57-34.0hs.

Bobylev, Boris Nikolaevich: *See—*
Farberov, Mark Iosifovich; Bobylev, Boris Nikolaevich; and Epshtein, David Izrailevich, 3,845,079.

Bode, Charles H., Jr.; Britcher, Harry H., Jr.; and McKelevey, Joseph E., to United States Steel Corporation. Apparatus for manipulating a hot metal tundish on a gantry car. 3,844,429, Cl. 214-313.000.

Bodolay, Stephen M.: *See—*
Bodolay, William A.; and Bodolay, Stephen M., 3,844,409.

Bodolay, William A.; and Bodolay, Stephen M. Two compartment unitary bag having shelf. 3,844,409, Cl. 206-45.340.

Boehler, Peter: *See—*
Hoegerle, Karl; Vogel, Christian; Boehler, Peter; and Ackermann, Hans, 3,845,055.

Boehm, Robert Francis, to International Business Machines Corporation. Monolithic memory using partially defective chips. 3,845,476, Cl. 340-173.0bb.

Boehringer Mannheim GmbH: *See—*
Kampe, Wolfgang; Fauland, Erich; Thiel, Max; Juhran, Wolfgang; and Stork, Harald, 3,845,035.

Boeing Company, The: *See—*
Manca, Michael E.; and Drinnon, Robert H., 3,844,375.
Manca, Michael E.; and Drinnon, Robert H., 3,844,376.
Roni, Jack C., 3,844,859.
Sindt, Melvin R., 3,845 268.
Stearns, Gabriel E., 3,844,482.

Bohannon, Alonzo. Automatic emergency braking system. 3,844,386, Cl. 188-167.000.

Bolduc, Lee Robin, to Medtronic, Inc. Intravascular lead assembly. 3,844,292, Cl. 128-418.000.

Bolhuis, Pieter Jan: *See—*
Luursema, Meerten; and Bolhuis, Pieter Jan, 3,845,350.

Bolling, Gustaf F.; and Cole, Gerald S., to Ford Motor Company. Method of casting inoculated metals. 3,844,776, Cl. 75-135.000.

Bomber, Robert J. Folding bookrack for stackable chairs. 3,844,609, Cl. 297-192.000.

Bomford, Michael James; and Cairns, Robert Lacock, to International Nickel Company, Inc., The. Thermomechanical processing of mechanically alloyed materials. 3,844,847, Cl. 148-11.50f.

Bonacci, John C.; and Mitchell, Kenneth M., to Mobil Oil Corporation. Dual catalyst converter process. 3,844,934, Cl. 208-66.000.

Bongard, James A., to Cutler-Hammer, Inc. Low profile electromagnetic relays. 3,845,431, Cl. 335-152.000.

Boniface, Frederick George: *See—*
Barlett, William John; and Boniface, Frederick George, 3,844,071.

Bonnat, Christian Pierre: *See—*
Croix-Marie, Francis Marie Jean; Bonnat, Christian Pierre; and Morel, Jean-Pierre Georges Denis, 3,844,218.

Booth, Gary Edwin, to Procter & Gamble Company, The. Detergent compositions. 3,844,952, Cl. 252-8.750.

Boothe, Willis Anson, to General Electric Company. Method and apparatus for controlling the ratio of gases in a mixture. 3,844,304, Cl. 137-7.000.

Boothman, David Richard; and Nutt, David Walter, to Canadian General Electric Company, Limited. Solid state thermal overload indicator. 3,845,354, Cl. 317-13.00b.

Borg-Warner Corporation: *See—*
Bechstein. Ernest L.; and Cronauer, Donald C., 3,845,095.
Lawson, Lance C., 3,845,355.

Borg-Warner-Stieber GmbH: *See—*
Hallerberg, Karl J., 3,844,391.

Borggren, Kjell Christian; and Soderstrom, Nils Erik. Arrangement in seating furniture or seats for attaching seat and back supporting elements. 3,844,612, Cl. 297-445.000.

Borner, Manfred, to Telefunken, Tepa, Patentverwertungesellschaft mbH. Electro-optical transmission system utilizing laser. 3,845,293, Cl. 250-199.000.

Bosburg, Guy M.; and Marxen, John C., to Weber Marking Systems, Inc. Covering for perforated inking drums of stencil printing machines. 3,844,212, Cl. 101-116.000.

Bosch, Robert, Fernsehanlagen GmbH: *See—*
Schneider, Hans-Dieter; and Bachmann, Horst, 3,845,238.

Bosch, Robert, G.m.b.H.: *See—*
Nonnenmann, Wolfgang; Wurst, Bert; Misch, Wolfgang; and Schonart, Edgar, 3,844,114.
Stroezel, Reinhold, 3,844,392.

Boss, A. Evan; Ram, Michael J.; and Reynolds, Thomas K., to Celanese Corporation. Production of uniformly resin impregnated carbon fiber ribbon. 3,844,822, Cl. 117-119.600.

Boswinkle, George: *See—*
Burke, Harry Dennis; and Boswinkle, George, 3,844,948.

Bottger, Christa: *See—*
Haustein, Heiner; Laube, Dieter; and Bottger, Christa, 3,844,141.

Bourassa, Hugh, to National-Standard Company. Axially adjustable positioning means. 3,844,177, Cl. 74-89.150.

Boyajian, Charles G. Dissemblable float. 3,844,236, Cl. 114-.50f.

Boyd, James W.: *See—*
Bessett, Clifford H.; and Boyd, James W., 3,844,337.

Bozek, John S., to Continental Can Company, Inc. Method and apparatus for forming a can end. 3,844,154, Cl. 72-336.000.

Bradley, Robert W., to USM Corporation. Adjustable timing device. 3,845,269, Cl. 219-10.770.

Brado, James A.: *See—*
Parent, Richard A.; and Brado, James A., 3,844,815.

Bradshaw, Kenneth; and Buckingham, James Ernest, to Cam Gears Limited. Rack and pinion assemblies. 3,844,182, Cl. 74-498.000.

Brady, James N.: *See—*
Phillips, Dennis G.; and Brady, James N., 3,845,389.

Bram, Georges Eugene, to Pont-A-Mousson S.A. Locking device for pipe elements. 3,844,589, Cl. 285-184.000.

Bramel, Gerald F., to Staley, A. E., Manufacturing Company. Compositions and method for making water resistant, short tack adhesives. 3,844,807, Cl. 106-213.000.

Brand, John R.; Carlson, Alden J.; and Penhollow, Bert G. H., to Warwick Electronics Inc. Chord control system for electronic organ. 3,844,192, Cl. 84-1.010.

Brandstadter, Jack M.: *See—*
Taylor, John E.; and Brandstadter, Jack M., 3,844,196.

Brandt, Herbert, to Apparatebau Rothemuhle Brandt & Kritzler. Exhaust gas treatment. 3,844,740, Cl. 55-83.000.

Brandt Industries, Inc.: *See—*
Brandt, Robert O., Jr.; and Williams, George V., 3,844,529.

Brandt, Robert O., Jr.; and Williams, George V., to Brandt Industries, Inc. Fluid valve having a pressure responsive internal membrane. 3,844,529, Cl. 251-61.100.

Branham, Norvel R.; and Pantaze, Peter C., Pantaze, Giannina Russo, executrix of the will of said Pantaze, Peter Charles; deceased; assor. to Pantaze, Gianinna Russo. Method and apparatus for stabilizing vehicles. 3,844,048, Cl. 33-203.160.

Branson, Charles D., to Robertshaw Controls Company. Computer cooking means. 3,845,275, Cl. 235-61.00a.

Braun, Roland J.; Kuntzleman, Harry C.; and Meier, Herbert E., to International Business Machines Corporation. Modular hall effect device. 3,845,445, Cl. 338-32.00h.

Breitigam, Walter V.; and Henderson, Bennett M., to Shell Oil Company. Lubricant compositions. 3,844,960, Cl. 252-32.70e.

Brenner, Stanley S., to Perfect Line Manufacturing Corporation. Means for protecting electrical receptacles. 3,845,234, Cl. 174-67.000.

Brian, Rene, to Pomagalshi S.A. Safety device for a skilift. 3,844,223, Cl. 104-173.000.

Bridgestone Tire Company Limited: *See—*
Kondo, Yoshikazu; Yamazaki, Harumichi; and Akinaga, Akito, 3,844,324.

Briggs, Garth Q., to Murray-Black Co., Inc., The. Wood graining tool. 3,843,992, Cl. 15-210.500.

Brindist, Frederick J. Pressure relief valve unit. 3,844,310, Cl. 137-557.000.

Brink, Robert H., Jr.; Shema, Bernard F.; and Swered, Paul, to Betz Laboratories, Inc. Slime control composition containing quaternary ammonium chloride and its use. 3,845,216, Cl. 424-329.000.

Britcher, Harry H., Jr.: *See—*
Bode, Charles H., Jr.; Britcher, Harry H., Jr.; and McKelevey, Joseph E., 3,844,429.

British Insulated Callender's Cables Limited: *See—*
Edwards, Derek Reginald, 3,844,860.

British Ropes Limited: *See—*
Stacey, Andrew Gordon, 3,844,848.

Brixner, Lothar H., to Du Pont de Nemours, E. I., and Company. Ferroelastic materials. 3,844,967, Cl. 252-62.900.

Brock, James McFarlane; Gillan, Anthony David; Marden, Adrian; and Pancewicz, Arthur Christopher, to Imperial Chemical Industries Limited. Suspended ceiling. 3,844,080, Cl. 52-222.000.

Brodeur, Rene H.; Terlecky, Boris; and Greenfield, Lawrence P. Railway car truck. 3,844,226, Cl. 105-222.000.

Brodowski, Walter: *See—*
Frank, Dieter; Brodowski, Walter; and Hentschel, Peter, 3,845,014.

Brody, Thomas P.: *See—*
Reitbeock, Heribert J. P.; and Brody, Thomas P., 3,845,471.

Brooks, Ashley A.: *See—*

Lenoir, Francis X.; Metz, Bruce E.; Brooks, Ashley A.; and Hill, William J., 3,844,872.

Brooks, Frank E., to Saco-Lowell Corporation. Spinning and twister ring leveling apparatus. 3,844,102, Cl. 57-122.000.

Brooks, Kenneth R.; Dave, Axaybabu M.; and Kothari, Tushar D., to Ford Motor Company. Dynamoelectric machine rotor. 3,845,340, Cl. 310-217.000.

Brooks, Peter: *See—*
Ditlinger, Richard J.; and Brooks, Peter, 3,844,388.

Brown & Williamson Tobacco Corporation: *See—*
Sexstone, John H., 3,844,200.

Brown, Darrell E.: *See—*
Birch, Arthur I.; and Brown, Darrell E., 3,844,290.

Brown, Edward A., to Searle, G. D., & Co. 11-Oxygenated 9 alpha-fluoro-6 alpha, 7 alpha-dihydro-17-hydroxy-3-oxo-3 H-cyclopropa(6,7)-17 alpha-pregna-4,6-diene-21-carboxylic acids, and salts and esthers thereof. 3,845,083, Cl. 260-397.100.

Brown, Melancthon S.; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. N-Alkylthio N-alkyl aryl carbamates. 3,845,101, Cl. 260-479.00c.

Brown Oil Tools, Inc.: *See—*
Garrett, Henry U., 3,844,352.

Brown, Robert J.: *See—*
Habert, William C.; Baumgartner, Wayne, Sr.; and Brown, Robert J., 3,844,871.

Brown, Stuart H., to Chevron Research Company. Lubricating oil additives. 3,844,965, Cl. 252-51.50a.

Brownstein, Arthur M.; and Kerr, David L., to Sun Research and Development Co., mesne. Oxidation of secondary and tertiary alkyl aromatic hydrocarbons. 3,845,140, Cl. 260-610.00b.

Bruce, John MacMillan, Jr., to Du Pont de Nemours E. I., and Company. Method of removing halocarbons from gases. 3,845,191, Cl. 423-240.000.

Bruels, John F. Pneumatic-electric switch apparatus with lock out feature. 3,845,258, Cl. 200-81.00h.

Brunschwig, John M.: *See—*
Stone, William M.; Brunschwig, John M.; and Zurbuch, Kenneth J., 3,844,031.

Brushwyler, Gordon R.; and Kotalik, Richard J., to Robertshaw Controls Company. Process control system. 3,845,376, Cl. 318-591.000.

Brynko, Carl, to Reprographic Materials, Inc. Agglomeration of pigment particles and compositions utilizing same. 3,844,811, Cl. 106-309.000.

Bublitz, Donald E.: *See—*
Kurihara, Norman H.; and Bublitz, Donald E., 3,845,068.

Bucci, Robert. Making seamless tubing by continuous process. 3,844,332, Cl. 164-70.000.

Buchanan, Stuart R.: *See—*
Oman, Gary F.; Strojny, Lawrence J.; Froehling, Paul H.; and Buchanan, Stuart R., 3,845,467.

Buchanan, Stuart R.; Froehling, Paul H.; Oman, Gary F.; and Huebner, Thomas W., to Johnson Service Company. Data communication system employing a series loop. 3,845,472, Cl. 340-163.000.

Buchner, Werner; Noll, Walter; Reich, Friedrich; Kortmann, Wilfried; and Pfeiffer, Josef, to Bayer Aktiengesellschaft. Dressing sewing thread to reduced friction. 3,844,826, Cl. 117-138.80f.

Buchtel, Dean H. Measured dispenser. 3,844,454, Cl. 222-453.000.

Buck, Henry M. Valve seat. 3,844,532, Cl. 251-360.000.

Buckingham, James Ernest: *See—*
Bradshaw, Kenneth; and Buckingham, James Ernest, 3,844,182.

Bucyrus-Erie Company: *See—*
Lang, David M.; and Nelmark, Jack D., 3,844,547.

Buie, Robert E., to Child Resistant Packaging Corporation. Child resistant safety container. 3,844,407, Cl. 206-1.500.

Bulkley, Clifford T.; and Shaw, David N., to Dunham-Bush, Inc. Compressor crank case venting arrangement for eliminating lube oil carryover. 3,844,688, Cl. 417-313.000.

Bullard, Alvan H.; and Calder, William, III, to Foxboro Company, The. Process control system for hazardous areas. 3,845,356, Cl. 317-20.000.

Bunker Ramo Corporation: *See—*
Masi, James V., 3,844,637.

Buran, Ulrich: *See—*
Sedlatschek, Karl; Heitzinger, Friedrich; Beyer, Horst; and Buran, Ulrich, 3,844,729.

Burgett, Richard R.; and Holleboom, Bruce W., to General Motors Corporation. Air fuel ratio sensor. 3,844,920, Cl. 204-195.00s.

Burggraf, Frederick, to General Electric Company. Impingement-convective cooling system. 3,844,343, Cl. 165-109.000.

Burian, Paul. Hand operable long reach tool. 3,844,599, Cl. 294-19.00r.

Burke, Harry Dennis; and Boswinkle, George, to Whirlpool Corporation. Reactor for continuous wet oxidation process. 3,844,948, Cl. 210-152.000.

Burke, Oliver W., Jr. Aqueous latices of high polymer compositions and processes and means for producing same. 3,844,329, Cl. 159-6.00r.

Burkin, Alfred Richard, to National Research Development Corporation. Deposition of copper. 3,844,763, Cl. 75-.50a.

Burness, Donald M.; Haist, Grant M.; and King, James R., to Eastman Kodak Company. Incorporation of sulfonyl derivatives of isothiourea in light-sensitive elements. 3,844,788, Cl. 96-61.00r.

Burnett, Ronald Cyril, to United Kingdom Atomic Energy Authority. Coated particle oxide fuel for nuclear reactors. 3,845,177, Cl. 264-.500.

Burns, Cecil M.: *See—*
Leonard, William A.; Kunak, Anthony F.; and Burns, Cecil M., 3,844,813.

Burroughs Corporation: *See—*
Fabry, Donald F., 3,845,479.

Burrus, F. J., & Cie: *See—*
Artho, Antoine; Muriset, Pascal; and Henzelin, Bernard, 3,844,541.

Burton, Edward Arthur, to Dielectrics International Limited. Pressurized insulant of solid and fluid for a conductor. 3,845,233, Cl. 174-24.000.

Bush, John B., Jr.: *See—*
Finkbeiner, Herman L.; and Bush, John B., Jr., 3,845,116.

Byck, Joseph S.: *See—*
Miller, Walter A.; and Byck, Joseph S., 3,843,974.

Byler, William H.; Raffman, Halsey L.; and Masi, Frank, to United States Radium Corporation. X-ray film identification means. 3,845,314, Cl. 250-476.000.

Cabut, Louis Antoine: *See—*
Kienzle, Jean Andre Paul; and Cabut, Louis Antoine, 3,845,081.

Cadart, Michel: *See—*
Leroy, Pierre; Cadart, Michel; Morlet, Jean Georges; and Saleil, Jean, 3,844,768.

Cairns, Robert Lacock: *See—*
Bomford, Michael James; and Cairns, Robert Lacock, 3,844,847.

Calder, William, III: *See—*
Bullard, Alvan H.; and Calder, William, III, 3,845,356.

Calderon, Albert. Method of controlling emissions from furnaces. 3,844,769, Cl. 75-60.000.

Caldwell, Laurence B.: *See—*
Shaffer, Robert S.; and Caldwell, Laurence B., 3,844,820.

Caldwell Manufacturing Company: *See—*
Nobes, William Douglas, 3,844,066.

Calhoun, Frederick L., to Industrial Dynamics Company, Ltd. Container inspection system and method. 3,844,018, Cl. 29-407.000.

California Institute of Technology: *See—*
Hong, Jung Pyo, 3,845,466.

Calspan Corporation: *See—*
Weatherston, Roger C., 3,844,689.
Weatherston, Roger C., 3,844,695.

Calvin, John N., to Combustion Engineering Inc. Helical flow deflector cone for fuel element assemblies. 3,844,888, Cl. 176-78.000.

Cam Gears Limited: *See—*
Bradshaw, Kenneth; and Buckingham, James Ernest, 3,844,182.

Campbell, James W. Method for cutting panels. 3,844,426, Cl. 214-152.000.

Campbell, Mahlon E.; and Walker, William D., to Midwest Research Institute. Solid film lubricant with polyamide binder. 3,844,953, Cl. 252-12.000.

Canadian General Electric Company, Limited: *See—*
Boothman, David Richard; and Nutt, David Walter, 3,845,354.

Canadian Patents and Development Limited: *See—*
Ruel, Maurice M. J.; and Sirianni, Aurelio Frederick, 3,844,759.

Canon, Inc.: *See—*
Tsuchiya, Kaichi; and Shinichiro, Nagashima, 3,844,781.

Carborundum Company, The: *See—*
Economy, James; and Nowak, Bernard E., 3,845,099.
Sypitkowski, James R., 3,844,947.

Carde, Ring: *See—*
Roelofs, Wendell; Kochansky, Jan; and Carde, Ring, 3,845,108.

Cardon, Carlos D.; and Griffone, Lawrence P., to Sperry Rand Corporation. Digital detector of an analog signal. 3,845,399, Cl. 328-138.000.

Cariou, Jean M.; and Juhasz, Jean, to Etablissements Gardinier. Reactor suitable for reactions between two fluids. 3,844,721, Cl. 23-259.200.

Carlson, Alden J.: *See—*
Brand, John R.; Carlson, Alden J.; and Penhollow, Bert G. H., 3,844,192.

Carondelet Foundry Company: *See—*
Culling, John H., 3,844,774.

Carossi, Jean-Claude; and Fierard, Pierre, to Commissariat a l'Energie Atomique. Method and device for the measurement of thickness by ultrasonic resonance. 3,844,166, Cl. 73-67.900.

Carr, Walter J., Jr., to Westinghouse Electric Corporation. Magnetic domain computational arrangement. 3,845,478, Cl. 340-174.0tf.

Carrier Corporation: *See—*
Le Blanc, Jack J., 3,844,686.
Wentroble, Dale E.; and Coleman, Milton H., 3,844,868.

Carroll, David L.: *See—*
Wernlund, Roger F.; Carroll, David L.; Gibson, Henry C.; and Cohen, Martin J., 3,845,301.

Carroll, Michael W. Cup dispenser. 3,844,444, Cl. 221-46.000.

Carson, Robert W. Electronic micrometers employing digital processing techniques. 3,844,047, Cl. 33-166.000.

Carter, James M., to Control Data Corporation. Tension sensing apparatus. 3,845,434, Cl. 336-30.000.

Carter, Lloyd G.: *See—*
Sutton, David L.; and Carter, Lloyd G., 3,844,351.

Carter, William E., Sr., to Thermo-Kinetics, Inc. High velocity filter. 3,844,749, Cl. 55-341.000.

Case, J. I., Company: *See—*
Bailey, Leonard R., 3,844,425.
Lamer, Gerald P., 3,844,418.

Casio Computer Co., Ltd.: *See—*

Kashio, Toshio, 3,844,105.

Cass, Eugene E.; Enichen, William A.; and Havas, Janos, to International Business Machines Corporation. Forming a compact multilevel interconnection metallurgy system for semi-conductor devices. 3,844,831, Cl. 117-212.000.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See*—
Stachel, Adolf; Beyerle, Rudi; Kunze, Wilhelm; Nitz, Rolf-Eberhard; and Scholtholt, Josef, 3,845,052.
von Brachel, Hanswilli; and Cornelius, Dieter, 3,845,034.

Castro, Rodolfo: *See*—
Tarbox, John W.; Hinds, Walter E.; and Castro, Rodolfo, 3,844,462.

Cato, Carl P., to Dacam Corporation. Apparatus for decapping bottles. 3,844,093, Cl. 53-381.00a.

Caton, Dolphus D.; and Ralph, John R. Steering system for canoes and the like. 3,844,243, Cl. 114-153.000.

Caton, Michael Peter Lear; Parker, Trevor; and Watkins, Gordon Leonard, to May & Baker Limited. Cyclopentane derivatives. 3,845,096, Cl. 260-468.00d.

Cattrell, Victor Gordon, to National Research Development Corporation. Densitometers. 3,845,308, Cl. 250-363.000.

Cauge, Thomas P.; and Kocsis, Joseph, to Signetics Corporation. High voltage, high frequency double diffused metal oxide semiconductor device. 3,845,495, Cl. 357-23.000.

C.A.V. Limited: *See*—
Betteridge, John Francis, 3,844,676.

Cawley, Leo P., to Bioware, Inc. Stabilizing media template. 3,844,918, Cl. 204-180.00g.

Cebular, Edward J.: *See*—
Kramer, Stanley J.; and Cebular, Edward J., 3,844,197.

Cederlund, Elsa Margareta: *See*—
Zettergren, Birger; and Ahlgren, Hans Hjalmar, 3,844,359.

Celanese Corporation: *See*—
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Center for Blood Research: *See*—
Stathakos, Dimitri, 3,844,925.

Centre Electronique Horloger S.A.: *See*—
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Centre National d'Etudes Spatiales: *See*—
Regipa, Robert, 3,844,867.

Ceromet, Inc.: *See*—
Anderson, Raymond Burr, Jr., 3,844,323.

CH. Gervais, Societe Anonyme: *See*—
Goujard, Marie Pierre, 3,845,226.

Chabre, Andre Paul, to Commissariat a l'Energie Atomique. Method and device for the rapid measurement of the mass and concentration of particles. 3,844,174, Cl. 73-432.0ps.

Chadwick, David H.; and Reetz, Theodor; deceased (by Reetz, Adele; administratrix), to Baychem Corporation. Polyurethane elastomers. 3,845,019, Cl. 260-75.0nq.

Chadwick, Stanley Vincent, to General Motors Corporation. Telescopic shock absorber shield tube. 3,844,314, Cl. 138-109.000.

Chadwick, William H., Jr., to Sherman & Reilly, Inc. Grounding device for multi-conductor stringing blocks. 3,844,536, Cl. 254-134.3pa.

Chamberlain, Walter W., III, to Armstrong Cork Company. Perforated vinyl film ceiling board. 3,844,875, Cl. 161-112.000.

Chambers, Ferdinand Frank; and Dawson, Peter Hugh Bernon, to USM Corporation. Sole pressure members. 3,843,986, Cl. 12-146.00r.

Chambers, James L., to Criswell, H. C. Carrier accessory for beverages. 3,844,459, Cl. 224-29.00b.

Chang, Catherine Teh-Lin; Sheeto, Joseph John, Jr.; and Beutel, Jacob, to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions with improved resistance to oxygen inhibition. 3,844,790, Cl. 96-86.00p.

Chapman, James E.: *See*—
Hayward, Robert D.; Chapman, James E.; and Ray, Stanley R., 3,845,454.

Charlton, Donald A.; and Chen, Chao C., to Hughes Aircraft Company. Polarization insensitive transmission phase shifter. 3,845,421, Cl. 333-31.00r.

Chartier, Robert: *See*—
Demers, Jacques; and Chartier, Robert, 3,844,439.

Chem. pharmaz. Fabrik Dr. Hermann Thiemann GmbH: *See*—
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Chemagro Corporation: *See*—
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Chemed Corporation: *See*—
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Chen, Chao C.: *See*—
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Cherkasov, Jury Nikolaevich: *See*—
Lepp, Vladimir Romanovich; Sibgatulin, Kharis Malikovich; and Cherkasov, Jury Nikolaevich, 3,845,380.

Chervenak, Michael C.: *See*—
Wolk, Ronald H.; Chervenak, Michael C.; and Alpert, Seymour B., 3,844,933.

Chevron Research Company: *See*—
Anderson, Robert G.; and Honnen, Lewis R., 3,844,958.
Brown, Melancthon S., 3,845,101.
Brown, Stuart H., 3,844,965.
Coon, Marvin D., 3,844,732.
Hickson, Donald A., 3,844,978.
Hickson, Donald A., 3,844,979.
Kennedy, Brian R., 3,844,964.
Magee, Philip S., 3,845,172.
Singer, Malcolm S., 3,845,091.
Sweeney, William A.; and House, Ralph, 3,845,114.

Chiang, John Shu-Chi, to FMC Corporation. Automatic process of etching copper circuits with an aqueous ammoniacal solution containing a salt of a chloroxy acid. 3,844,857, Cl. 156-8.000.

Chiba, Ko; Maruyama, Masayuki; and Kobayashi, Daisaku, to Riken Piston Ring Kogyo Kabushiki Kaisha. Oil seal device for rotary piston engine. 3,844,693, Cl. 418-142.000.

Child Resistant Packaging Corporation: *See*—
Buie, Robert E., 3,844,407.

Chinn, Leland J., to Searle, G. D., & Co. 7-Halomethyl-17-hydroxy-3-oxo-17α-pregn-4-ene-21-carboxylic acid γ-lactones. 3,845,041, Cl. 260-239.570.

Chiron, Bernard; Rannou, Claude; and Bernard, Nicole, to Societe Lignes Telegraphiques et Telephoniques. Wideband non reciprocal integrated circuits utilizing surface wave propagation. 3,845,413, Cl. 333-1.100.

Christante, Ado. Pump attachable to an automobile exhaust. 3,844,319, Cl. 141-38.000.

Christensen, Leslie D.: *See*—
Tully, Geoffrey R., Jr.; and Christensen, Leslie D., 3,844,972.

Christenson, Lowell B.: *See*—
Black, Harry G.; and Christenson, Lowell B., 3,844,241.

Chrysler Corporation: *See*—
Hagen, Frederick A.; and Davis, Royal E., 3,844,027.

Ciaffone, Charles P., to CPC Engineering Corporation. Movement of alum sludge. 3,844,945, Cl. 210-73.000.

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Clarady, Leroy E.; McSweeney, J. Jay; and Smith, Joe H., to B & C Industries, Inc. Circuitry for converting AC power to regulated DC power. 3,845,374, Cl. 318-445.000.

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Clark, Frank S., to Monsanto Company. Polyphenyl trioether lubricating compositions. 3,844,962, Cl. 252-46.700.

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Cohen, Amnon Mordechai, to Polak's Frutal Works N.V. Alicyclic diketones and process for their manufacture. 3,845,133, Cl. 260-586.00r.

Cohen, Herman. Frozen food defrosting indicator. 3,844,718, Cl. 23-253.0tp.

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Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO_2, CaO and ZnO. 3,845,407, Cl. 331-94.50e.
Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO_2, SrO and ZnO. 3,845,408, Cl. 331-94.50e.
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Dickinson, Robert C., to Westinghouse Electric Corporation. Circuit breaker with spring charged operating mechanism. 3,845,263, Cl. 200-153.0sc.
Dieges, Paul Bertrand. Vaporization of exhaust products in hydrogen-oxygen engine. 3,844,262, Cl. 123-119.00a.
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Dimmer, Charles L.; and Perry, Eric, to Nobilium Products, Inc. Centrifugal casting and curing apparatus. 3,844,702, Cl. 425-425.000.
Dimter, Erwin. Apparatus for end profiling and glue application in the end bonding of boards. 3,844,320, Cl. 144-3.00r.
Ditlinger, Richard J.; and Brooks, Peter, to Bendix Corporation, The. Automatic brake adjuster and reset having extensionable feature. 3,844,388, Cl. 188-196.00r.
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Dobler, Helmut, to Daimler-Benz Aktiengesellschaft. Lubricant supply system for rotary piston engine. 3,844,691, Cl. 418-97.000.
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Drabkina, Lidia Emelianovna; Mazurek, Jury Vatslavovich; Myasoedov, Dmitry Nikolaevich; Prokhorov, Viktor Pavlovich; Kachalov, Vladimir Alexandrovich; and Ziv, David Moiseevich; deceased (by Ziv, Valentina Spiridonovna; administratrix). Method of manufactue of nuclear radiation sources. 3,844,833, Cl. 117-220.000.
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Ferag AG: *See—*
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Ferguson, J. C., 1/3 to Sherwin, Alton E. Enclosed cab type land vehicle air treatment system. 3,844,202, Cl. 98-2.110.

Fernandez, Manuel: *See—*
Goldfarb, Adolph E.; and Fernandez, Manuel, 3,844,061.

Ferno, Ove Birger; and Ohlsson, Corfitz Bengt Ingvar, to Aktiebolaget Leo. Buffered smoking substitute compositions. 3,845,217, Cl. 426-3.000.

Ferraro, Charles F.; Javick, Richard A.; and Robertson, James A., to FMC Corporation. Aqueous dispersion of low molecular weight polyamide particles and method of making it. 3,844,991, Cl. 260-18.00n.

Ferromet, Inc.: *See—*
Hightower, William G., 3,844,494.

Festa, Alexei Georgievich: *See—*
Filippov, Andrei Nikiforovich; Gorelov, Leonid Rafailovich; Festa, Alexei Georgievich; Ostapchuk, Alexandr Vasilievich; and Myshko, Konstantin Antonovich, 3,844,954.

Feucht, Charles A., to Teletype Corporation. Dual voltage FET inverter circuit with two level biasing. 3,845,324, Cl. 307-205.000.

Fiat Societa Per Azioni: *See—*
DiMajo, Franco, 3,844,225.

Fichteman, William Lee, to Du Pont de Nemours, E. I., and Company. Preparation of polymer solutions. 3,844,996, Cl. 260-23.10h.

Fico, Sally S.: *See—*
Bloom, Melvin S.; and Fico, Sally S., 3,844,791.

Fiddler, Theodore E.: *See—*
Fiddler, Theodore E.; and Adams, Arnold G. (said Adams assor. to said), 3,845,257.

Fiddler, Theodore E.; and Adams, Arnold G., said Adams assor. to said Fiddler, Theodore E. Electrical and fluid switch with crossing slide chambers. 3,845,257, Cl. 200-61.860.

Fierard, Pierre: *See—*
Carossi, Jean-Claude; and Fierard, Pierre, 3,844,166.

Fikentscher, Rolf: *See—*
Daeuble, Manfred; Oppenlaender, Kurt; and Fikentscher, Rolf, 3,844,711.

Filer, Frank P.: *See—*
Treffner, Walter S.; and Filer, Frank P., 3,844,802.

Filing Systems Inc.: *See—*
Potter, Frank, 3,844,416.

Filippov, Andrei Nikiforovich; Gorelov, Leonid Rafailovich; Festa, Alexei Georgievich; Ostapchuk, Alexandr Vasilievich; and Myshko, Konstantin Antonovich. Antifriction material. 3,844,954, Cl. 252-12.000.

Filter, Harold E.: *See—*
Plomer, John J.; Filter, Harold E.; and Lane, George A., 3,844,855.

Fincor, Inc.: *See—*
Metzler, James Monroe; and Foreman, James Blockinger, 3,845,366.

Findlay, John A. Cyclopentane or cyclohexane substituted unsaturated hydrocarbon esters having juvenile hormone activity. 3,845,088, Cl. 260-410.90r.

Finkbeiner, Herman L.; and Bush, John B., Jr., to General Electric Company. Use of anhydrides to improve oxidative coupling reactions. 3,845,116, Cl. 260-515.00r.

Finlay, Robert B., to Global Marine Inc. Arctic pipelaying. 3,844,129, Cl. 61-72.300.

Firmenich S.A., mesne: *See—*
Ohloff, Gunther; and Strickler, Hugo, 3,845,132.

Fischbeck, James D.: *See—*
Schold, George R.; and Fischbeck, James D., 3,844,490.

Fischer, Adolf: *See—*
Reicheneder, Franz; Kropp, Rudolf; and Fischer, Adolf, 3,845,054.

Fischer, Aksel: *See—*

Jensen, Borge; Fischer, Aksel; and Falck, Rolf Christian Luja, 3,844,078.

Fischer, Karl, Apparate-und Rohleitungsbau: *See*—
Rothert, Horst, 3,844,496.

Fishback, James K., to Consumat Systems Inc. Directional control of hot gases from an incinerator or the like. 3,844,233, Cl. 110-8.00r.

Fishel, Larry R.; and Pescetto, James R., to UMC Industries, Inc. Paper currency validator. 3,845,469, Cl. 340-149.00a.

Fisher Controls Company, Inc.: *See*—
Sumner, William D.; and Koch, Gary L., 3,844,312.

Fisher, Edward W., to Bailey Meter Company. Thin film resistance thermometer. 3,845,443, Cl. 338-25.000.

Fisher, Harry; and Fisher, Stuart, 1/2 to Stagg Zipper Corporation. Apparatus for gapping zipper chain. 3,844,017, Cl. 29-207.50d.

Fisher, Howard M.; Albers, Bernd G.; and Luczak, Joseph J., to Pennsylvania Engineering Corporation. Concrete molding machine. 3,844,524, Cl. 249-120.000.

Fisher, Stuart: *See*—
Fisher, Harry; and Fisher, Stuart, 3,844,017.

Fishkis, Mikhail Mironovich: *See*—
Krendel, Leonid; Nikonov, Vladimir Filippovich; Ognevsky, Viktor Alexeevich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Palkin, Valery Evseevich; Pakhomov, Anatoly Vladimirovich; Stepin, Anatoly Loginovich; Trofimov, Oleg Fedorovich; Shpelyakovsky, Konstantin Zakharovich; Ryskind, Alexandr Moiseevich; Shklyarov, Isaak Nakhimovich; Rabin, Moisei Osipovich; Kalner, Veniamin Davydovich; and Fishkis, Mikhail Mironovich, 3,844,852.

Fishwick, John Henry, to Foote Mineral Company. Colorant composition for clay products and method of making colored clay products. 3,844,812, Cl. 106-316.000.

Fitton-Kearns, Rosslyn, to Makearn Holdings Limited. Traffic signals. 3,844,667, Cl. 404-16.000.

Fitzmayer, Louis H., to General Electric Company. Microwave oven with waveguide feed. 3,845,267, Cl. 219-10.500.

Fitzpatrick, Roger Sean: *See*—
Taylor, John Edward; and Fitzpatrick, Roger Sean, 3,844,480.

Fitzsimmons, Robert. Externally adjustable tool cartridge assembly. 3,844,672, Cl. 408-155.000.

Fitzthum, Nathan J.: *See*—
Patel, Hiralal V.; Olejarczyk, Anthony J.; and Fitzthum, Nathan J., 3,844,148.

Fives Lille Cail: *See*—
Mercier, Andre, 3,844,949.

Fives-Cail Babcock: *See*—
Ghestem, Gerard, 3,844,709.

Flais, Louis R.; and McIlroy, Robert A., to Babcock & Wilcox Company, The. System for removing sodium chloride contaminants from a magnesium base pulping process. 3,844,879, Cl. 162-36.000.

Fleer, Otto; and Grill, Hubert, to Siemens Aktiengesellschaft. Device for operating dental drilling machines. 3,844,039, Cl. 32-22.000.

Fleischhauer, Horst: *See*—
Kempermann, Theo; Eholzer, Ulrich; Westlinning, Hermann; and Fleischhauer, Horst, 3,844,970.

Fleischman orge L.: *See*—
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Flex-Kleen Corporation: *See*—
Ray, Frank M., 3,844,750.

Flinn, William S.: *See*—
Bevilacqua, Frank; Flinn, William S.; and Groves, Malcolm D., 3,844,884.

Flohr, Henry. Snowmobile ski system. 3,844,367, Cl. 180-5.00r.

Floren, Carl E.: *See*—
Sands, Robert E.; and Floren, Carl E., 3,844,585.

Flynn, James P.; Lane, Georges A.; and Plomer, John J., to Dow Chemical Company, The. Nitrocellulose propellant composition containing aluminum hydride. 3,844,856, Cl. 149-19.800.

FMC Corporation: *See*—
Chiang, John Shu-Chi, 3,844,857.
Eggert, Ralph H.; and Woods, Quentin T., 3,844,201.
Ferraro, Charles F.; Javick, Richard A.; and Robertson, James A., 3,844,991.
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Pepmeier, Carl R., 3,844,090.
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Foley, Charles F.; and McCarthy, Charles D. Balancing maze game. 3,844,562, Cl. 273-110.000.

Folliard, Patrick Robert James: *See*—
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Foltz, James Walter: *See*—
Daniels, Richard Gary; and Foltz, James Walter, 3,845,325.

Fontaine, John P. K. Jaw and wedge for fifth wheels. 3,844,584, Cl. 280-434.000.

Foote Mineral Company: *See*—
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Ford Motor Company: *See*—
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Brooks, Kenneth R.; Dave, Axaybabu M.; and Kothari, Tushar D., 3,845,340.
Fenton, James E., 3,844,111.
Labana, Santokh S.; and Theodore, Ares N., 3,845,010.
Labana, Santokh S.; and Theodore, Ares N., 3,845,016.

Foreman, Donald S., to Honeywell Inc. Intrusion detection system. 3,845,461, Cl. 340-1.00r.

Foreman, James Blockinger: *See*—
Metzler, James Monroe; and Foreman, James Blockinger, 3,845,366.

Formica Corporation: *See*—
Fremont, Robert Emil; Guertin, Alfred Thomas; Fay, Charles Robert; and Stinson, John William, 3,845,287.

Forney, Dan Edward: *See*—
Donoghue, John Francis; Forney, Dan Edward; Heiks, Robert Lee; Lasson, Gerald A.; McCall, Robert Eugene; and Rich, Charles Ray, 3,844,870.

Forry, James E., to United States of America, Army. Apparatus for tank filling. 3,844,089, Cl. 53-88.000.

Forster, Friedrich Martin. Method of magnetographic inspection of metal parts using a roll of magnetic tape having an adhesive coating. 3,845,382, Cl. 324-37.000.

Forster, Harry D., Jr., to Holograph Corporation. Three-Dimensional projection system. 3,844,645, Cl. 353-10.000.

Forsythe, David M.; and Runckel, William J., to Publishers Paper Co. Repair of wooden articles. 3,844,863, Cl. 156-98.000.

Foseco International Limited: *See*—
Ravault, Frank Ernest George, 3,845,181.

Foster, Edson P. Felting needle. 3,844,004, Cl. 28-4.00n.

Foster, Kenneth William Samuel; and Irons, Duncan Kinloch, to Renold Limited. Hydraulic motors and driving systems employing same. 3,844,198, Cl. 91-472.000.

Fouces, Juan M.; and Fouces, Manuel. Wheel lock. 3,844,146, Cl. 70-227.000.

Fouces, Manuel: *See*—
Fouces, Juan M.; and Fouces, Manuel, 3,844,146.

Fox, Jerry D.: *See*—
Lingenfelder, Paul G.; and Fox, Jerry D., 3,844,638.

Fox, John William, to Project Laboratories, Limited. Inflatable safety belt and head bag. 3,844,581, Cl. 280-150.0lb.

Foxboro Company, The: *See*—
Bullard, Alvan H.; and Calder, William, III, 3,845,356.

Fraanje, Marinus Joost; Maarhuis, Rudolf Gerard Jan; and Noorman, Frans, to Grontmij Grondverbetering en Ontginningmaatschappij. Method of manufacturing a scale model of a roadway. 3,844,052, Cl. 35-16.000.

Fradkin, David B.: *See*—
Roehling, Duane J.; and Fradkin, David B., 3,845,300.

Frank, Dieter; Brodowski, Walter; and Hentschel, Peter, to Akzona Incorporated, mesne. Metal compounds of polycarbamoylamidrazones. 3,845,014, Cl. 260-47.0cb.

Franklin GNO Corporation: *See*—
Wernlund, Roger F.; Carroll, David L.; Gibson, Henry C.; and Cohen, Martin J., 3,845,301.

Franko-Filipasic, Borivoj Richard; Orwoll, Edward F.; and Patel, Vithal C., to FMC Corporation. Polymeric phosphazenes and process for making same. 3,845,167, Cl. 260-927.00n.

Fraser, Cyril William. Self levelling structure. 3,844,517, Cl. 248-188.300.

Frazier, Joseph R., Jr.: *See*—
Bew, Rudolph V.; Walters, Anderson J.; Funk, Donald J.; and Frazier, Joseph R., Jr., 3,844,155.

Frederick, Harold L. Dental cabinetry. 3,844,633, Cl. 312-209.000.

Frederickson, Robert Eugene, to McCulloch Corporation. Method of casting cylinders. 3,844,334, Cl. 164-132.000.

Freedman, Gerald, to Freedman Seating Company. Mobile home lounge. 3,844,608, Cl. 297-92.000.

Freedman Seating Company: *See*—
Freedman, Gerald, 3,844,608.

Freid, Wilbert Bernard, to General Electric Company. Load distributing thrust mount. 3,844,115, Cl. 60-39.310.

Freiman, Aaron, to M&T Chemicals Inc. Coating composition. 3,845,005, Cl. 260-33.60a.

Fremont, Robert Emil; Guertin, Alfred Thomas; Fay, Charles Robert; and Stinson, John William, to Formica Corporation. Method and apparatus for controlling a material treater. 3,845,287, Cl. 235-151.100.

French, Robert L., to Avcon, Inc. Method and apparatus employing automatic route control system system. 3,845,289, Cl. 235-151.200.

Frey, Richard L.: *See*—
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Frick Company: *See*—
Bierley, Howard L.; and Witmer, Phares B., III, 3,844,133.

Frickenhaus, Gerrit; and Otten, Hans Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Treatment of dyed polyamides. 3,844,712, Cl. 8-165.000.

Frico Products Corporation, mesne: *See*—
Smithers, Philip G. K., 3,843,994.

Fries, Walter; Berg, Markus; and Dohr, Manfred, to Henkel & Cie GmbH. Detergent compositions containing a textile softener. 3,844,951, Cl. 252-8.600.

Friske, Warren H.; and Page, John P., to Rockwell International Corporation. Desensitization of alloys to intergranular corrosion. 3,844,846, Cl. 148-11.50r.

Froehling, Paul H.: *See*—
Buchanan, Stuart R.; Froehling, Paul H.; Oman, Gary F.; and Huebner, Thomas W., 3,845,472.
Oman, Gary F.; Strojny, Lawrence J.; Froehling, Paul H.; and Buchanan, Stuart R., 3,845,467.

Fromme, Hans-Georg. Conveyor chain. 3,844,221, Cl. 104-172.00c.

Frost, C. L., and Son, Inc.: *See—*
Frost, Charles C.; and Weis, Siegfried K., 3,844,010.

Frost, Charles C.; and Weis, Siegfried K., to Frost, C. L., and Son, Inc. Method of making a bearing housing assembly. 3,844,010, Cl. 29-148.40a.

Fuchs, Otto; and Troster, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzoxanthene dyestuffs. 3,845,075, Cl. 260-335.000.

Fuhr, Karl: *See—*
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Fuhrmann, Siegfried; Harders, Volkwart; Kruger, Hartmut; and Schwenke, Rudiger, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Releasable connection for coaxial tubes. 3,844,587, Cl. 285-47.000.

Fuji Denki Seizo Kabushiki Kaisha: *See—*
Yamaoka, Michihiko, 3,844,160.

Fuji Photo Film Co., Ltd.: *See—*
Ito, Yoshiteru; and Sonoda, Minoru, 3,844,786.
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Shimada, Takeo; Yokota, Yukio; and Hayashi, Jun, 3,844,784.
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Fujii, Masaaki, to Hitachi, Ltd. Apparatus for measuring neutron flux. 3,845,311, Cl. 250-390.000.

Fujimoto, Keimei; Mukai, Kunio; Yamamoto, Takaji; and Ishibe, Kouichi, to Sumitomo Chemical Company, Limited. Phosphorodithiolates. 3,845,173, Cl. 260-956.000.

Fujimoto, Shoichi: *See—*
Ihaya, Osamu; Ito, Munehiro; Hayashi, Tetsuo; and Fujimoto, Shoichi, 3,845,442.

Fujisoku Electric Co., Ltd.: *See—*
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Fujita, Tatsu: *See—*
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Fujita, Teizo; and Kikuchi, Masao, to Izumi Denki Company Limited. Relay socket. 3,845,460, Cl. 339-192.00r.

Fujitsuka, Takamichi: *See—*
Harada, Hideki; Yamashita, Keitaro; Sagara, Takehiko; Oyama, Sadahiro; Fujitsuka, Takamichi; Sekino, Tamotsu; and Takanashi, Masanori, 3,845,334.

Fukuda, Katsuhiro: *See—*
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Fukutani, Hideo; Miura, Konoe; and Murayama, Tetsuo, to Mitsubishi Chemical Industries Ltd. Photoconductive polyether composition having pendant pyrrole rings. 3,844,985, Cl. 260-2.00a.

Fukuwatari, Yasuo: *See—*
Nagasawa, Taro; Ryoki, Taizo; Kiyosawa, Isao; Oizumi, Saburo; Fukuwatari, Yasuo; Suzuki, Takashi; Ishibashi, Hitoshi; and Kawamura, Nobuo, 3,845,231.

Fuller Company: *See—*
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Funk, Donald J.: *See—*
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Gabrusenok, Pavel Stepanovich. Method of manufacturing a hydrosensitive element for a humidity sensitive device. 3,844,832, Cl. 117-219.000.

Gachot, Jean; and Lekarski, Simeon. Stepping motor of the fluid pressure type. 3,844,178, Cl. 74-128.000.

GAF Corporation: *See—*
Armento, William H., 3,845,032.
Bates, James E.; Farren, Francis J.; and Sklute, Jerome, 3,844,789.
Denis, Englebert; and De Bondt, Leon, 3,844,648.
Horai, John C.; and Sheeler, Calvin W., Jr., 3,844,804.
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Gallo, Charles F., to Xerox Corporation. Combined corona and luminescent discharge. 3,845,307, Cl. 250-326.000.

Gallo, Duane Gordon; and Majewski, Robert Francis, to Mead Johnson & Company. Fertility control process employing ethanolamines. 3,845,214, Cl. 424-274.000.

Gander, Robert Johns, to Johnson & Johnson. Cement compositions employing novel methacrylate monomer. 3,845,009, Cl. 260-42.150.

Gandino, Mario; and Paolo, Beretta, to Minnesota Mining and Manufacturing Company. Magenta couplers. 3,844,794, Cl. 96-100.000.

Garcea, Giampaolo, to Alfa Romeo S.p.A. Device for regulating the rate of flow of recycled exhaust gases in an internal combustion engine. 3,844,261, Cl. 123-119.00a.

Garcea, Giampaolo, to Alfa Romeo, S.p.A. Anti-skid device for motor vehicles. 3,844,371, Cl. 180-77.00r.

Garnett, William G. Sanitary fixture. 3,843,977, Cl. 4-69.000.

Garrett, Billy R. Holder for gasoline lantern. 3,844,519, Cl. 248-226.000.

Garrett, Henry U., to Brown Oil Tools, Inc. Method for modifying a well to provide gas lift production. 3,844,352, Cl. 166-297.000.

Gas Developments Corporation, mesne: *See—*
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Gaske, Joseph E., to DeSoto, Inc. Radiation curable non-gelled michael addition reaction products. 3,844,916, Cl. 204-159.160.

Gastrock, William Henry: *See—*
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Gauglitz, Gerhard: *See—*
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Gaylord Bros., Inc.: *See—*
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Gela, Helmut; Besenmatter, Walter; Scheiber, Robert; Schneider, Fritz; and Rothy, Gerhard, to Vockenhuber, Karl and Hauser, Raimund. Range finder. 3,844,658, Cl. 356-4.000.

Gelatt Investments, mesne: *See—*
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Geller, Carl F. Cable cutter. 3,844,037, Cl. 30-231.000.

Gemmer France: *See—*
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General Aniline & Film Corporation: *See—*
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General Atomic Company, mesne: *See—*
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General Signal Corporation: *See—*
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General Tire and Rubber Company, The: *See—*
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Geometrics, Inc.: *See—*
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George, David A.; Mayerhoffer, Kenneth E.; and Rodzen, Richard A., to United States of America, Air Force. Personnel armor suspension system. 3,843,969, Cl. 2-2.500.

Georges, Nicholas J.; and Pennell, William E., to Westinghouse Electric Corporation. Nuclear reactor fuel assembly. 3,844,887, Cl. 176-78.000.

Georgopulos, Thomas, to GTE Automatic Electric Laboratories, Incorporated. Loading coil packaging arrangement. 3,845,435, Cl. 336-65.000.

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Gerlach, Hans Georg, to U.S. Philips Corporation. Cathode-ray tube. 3,845,346, Cl. 313-424.000.

Gerlovich, Albert F., to Rheem Manufacturing Company. Conveyor with magnetic article holding means. 3,844,401, Cl. 198-41.000.

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Gettman, Herman: *See—*
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Gewerkschaft Eisenhutte Westfalia: *See—*
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Geymer, Douglas O., to Shell Oil Company. Hydrocracking heavy hydrocarbonaceous materials in molten zinc iodide. 3,844,928, Cl. 208-10.000.

Ghestem, Gerard, to Fives-Cail Babcock. Rotary kiln with cooling cells. 3,844,709, Cl. 432-80.000.

Giamei, Anthony F.: *See—*
Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H., 3,844,728.

Gianni, Sebastian J.; Seeley, William M.; Stillson, Timothy Jay; Hamilton, Clark B.; and Barker, Perley K., to Dunham-Bush, Inc. Refrigeration system with head pressure control. 3,844,131, Cl. 62-149.000.

Giardina, Nicholas; Gervis, Melvyn A.; Wozny, Eugene Taras; and Babcock, Richard D. Actuating mechanism for double bar lock. 3,844,592, Cl. 292-39.000.

Gibson, Henry C.: *See—*
Wernlund, Roger F.; Carroll, David L.; Gibson, Henry C.; and Cohen, Martin J., 3,845,301.

Gibson, John Anderson: *See—*
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Giesen, Gerardus Johannes, to Beondu A. G., mesne. Boiler and method of making same. 3,844,255, Cl. 122-225.00r.

Giglia, Robert Domenico: *See—*
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Gigliotti, Victor J. Golf game apparatus. 3,844,558, Cl. 273-87.00r.

Gigliotti, Victor J. Golf game apparatus. 3,844,565, Cl. 273-176.00f.

Gil, Fernando R. Apparatus for raising sunken vessels. 3,844,237, Cl. 114-51.000.

Gilbert Engineering Company, Inc.: *See—*
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Gillan, Anthony David: *See—*
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Gilliam, Calvin D.: *See—*
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Gillies, George Marshall: *See—*
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Gilligan, William H., to United States of America, Navy. N-Substituted N,N-bis(2-fluoro-2,2-dinitroethyl amines. 3,845,104, Cl. 260-482.00r.

Gilligan, William H., to United States of America, Navy. Nitrated and/or fluorinated ethyl amino acetic acids and esters thereof. 3,845,105, Cl. 260-482.00r.

Gilmore, Thomas P.: *See—*
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Gilsdorf, Richard C.; and Tout, Stanley D., to Bell & Howell Company. Picture display apparatus. 3,844,647, Cl. 353-101.000.

Gioia, Gaspare L.; Switzer, Norris H.; and Willerton, John K., to Omnionics, Inc. Hydraulic mechanism. 3,844,508, Cl. 244-43.000.

Giraudon, Raymond; and Metivier, Jean, to Rhone-Poulenc S.A. Benzaldoxime derivatives. 3,845,126, Cl. 260-566.0ae.

Girling Limited: *See—*
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Givaudan Corporation: *See—*
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Global Marine Inc.: *See—*
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Finlay, Robert B., 3,844,129.

Glover, Richard Donovan; and Nettleship, John Adrian. Method of making yarn shade cards. 3,844,864, Cl. 156-178.000.

Godden, Walter R. Logarithmic amplification circuit. 3,845,326, Cl. 307-230.000.

Godfrey, Keith Ernest, to Reckitt & Colman Products Limited. Phenylalkane derivatives in the treatment of inflammation. 3,845,215, Cl. 424-317.000.

Goeller, Leonhard A.: *See—*
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Goldfarb, Adolph E.; and Fernandez, Manuel, to Goldfarb, Adolph E. and Benkoe, Erwin. Animated lifting toy. 3,844,061, Cl. 46-119.000.

Goldstein, Bernard: *See—*
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Gomi, Shimpei: *See—*
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Gomi, Shimpei; Takahashi, Masaaki; Ishiguro, Tadashi; Okagami, Akio; Uemoto, Kunihiko; and Kuribayashi, Hiroshi. Process for treating by-product heavy fractions formed in the production of olefins. 3,844,932, Cl. 208-57.000.

Goodman, Ernest A., to Allis-Chalmers Corporation. Series-multiple transformer having non-integer series-jarallel voltage ratio. 3,845,437, Cl. 336-147.000.

Goodyear Tire & Rubber Company, The: *See—*
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Gotze, Johannes: *See—*
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Gotzmann, Karl J.: *See—*
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Grace, W. R., & Company: *See—*
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Grainger, Lewis M. D. Anti-pollution fuel system. 3,844,264, Cl. 123-136.000.

Grandadam, Jean Andre, to ROUSSEL UCLAF. Method of increasing the caliber of poultry eggs. 3,845,208, Cl. 424-243.000.

Granovsky, Semen Abramovich: *See—*
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Granzow, Daniel B.; Malloney, William R.; and Miles, William B., to Addressograph-Multigraph Corporation. Combined facsimile receiving and sending unit. 3,845,239, Cl. 178-6.000.

Graser, Fritz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Blue anthraquinoid acid dyes. 3,845,080, Cl. 260-372.000.

Gray, Frederick Martin. Self-tuning units. 3,845,429, Cl. 334-16.000.

Gray, John C., to Trish Energetics, Inc. Spray coating apparatus. 3,844,483, Cl. 239-322.000.

Graybeal, Harold N., to Armstrong Cork Company. Method of silk screen printing. 3,844,213, Cl. 101-129.000.

Great Lakes Carbon Corporation: *See—*
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Green, Richard F.; Anderson, Albert E.; and Guarino, Alexander J., to Textron Inc. Hand held power tool with duplex handle. 3,844,360, Cl. 173-170.000.

Green, William B., to Texaco Inc. Extreme pressure grease with improved wear characteristics. 3,844,955, Cl. 252-21.000.

Greenberg, Donald K., to Barnes Drill Co. Clamping fixture for a tubular workpiece. 3,844,546, Cl. 269-22.000.

Greenfield, Lawrence P.: *See—*
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Grengs, Norbert G. Slide valve. 3,844,531, Cl. 251-327.000.

Greve, Heinz: *See—*
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Griesenbrock, Karl-Heinz, to Eaton Corporation. Multiple state master cylinder. 3,844,121, Cl. 60-562.000.

Griffiths, Joseph John; and Wilde, Raymond John, to Lever Brothers Company. Production of detergent compositions. 3,844,969, Cl. 252-108.000.

Griffone, Lawrence P.: *See—*
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Grinnell, Peter S., Jr., to International Equipment Company. Motor controller with power limiting. 3,845,371, Cl. 318-391.000.

Grisar, J. Martin; and Claxton, George P., to Richardson-Merrell Inc. Imidazo[1,2-a]azacycloalkanes. 3,845,071, Cl. 260-309.600.

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Gustafson, Ray. Device for scaling angles. 3,844,043, Cl. 33-91.000.

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Guttag, Alvin, to Weston Chemical Corporation. Trimethylol propane phosphite. 3,845,168, Cl. 260-927.00r.

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Habert, William C.; Baumgartner, Wayne, Sr.; and Brown, Robert J., to Uniroyal, Inc. Tire building machine. 3,844,871, Cl. 156-362.000.

Hackenberg, Hugert; and Zobel, Siegfried, to Agfa-Gevaert Aktiengesellschaft. Feeler device for engaging a film perforation to stop film transport. 3,845,493, Cl. 354-213.000.

Haddad, Heskel M.; and Loucas, Spiro P. Solid state ophthalmic medication delivery method. 3,845,201, Cl. 424-22.000.

Hadermann, Albert F.; Waters, Paul F.; and Woo, Jung Woo, to Applied Physical Chemistry Inc. High resistivity liquid/solid resistor. 3,845,448, Cl. 338-222.000.

Hadfield, Robert W.; and Harding, William H., to Textron Inc. Floor boxes. 3,844,440, Cl. 220-3.700.

Hagberg, John E., to Westinghouse Electric Corporation. Protective relaying apparatus of the unblock type. 3,845,357, Cl. 317-27.00r.

Hagemeyer, Hugh J., Jr.; Blood, Alden E.; and Snapp, Thomas C., Jr., to Eastman Kodak Company. Syntheses of alpha, beta-unsaturated esters, aldehydes, ketonesand nitriles. 3,845,106, Cl. 260-486.00d.

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Haigh, Jack M.; and Mackay, Joseph H., Jr. Replaceable resilient pad assembly for abrasive finishing articles. 3,844,072, Cl. 51-378.000.

Haines, Derrick John, to Ransome Hoffmann Pollard Limited. Linear motion ball bearings. 3,844,629, Cl. 308-6.00c.

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Hale, Lloyd R.; and Baxendale, John W., to Vendo Company, The. Control means including disabled selection lock-out for vending machine. 3,844,394, Cl. 194-10.000.

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Hall, Johnnie W., to Helped Corporation. Hickory smoked french barbecue bakery products. 3,845,221, Cl. 426-62.000.

Hall, Leslie Carl, Jr., to AMP Incorporated. Extraction tool. 3,844,013, Cl. 29-203.00h.

Haller, Herbert, to Gewerkschaft Eisenhutte Westfalia. Cutter devices for use in mineral mining. 3,844,619, Cl. 299-92.000.

Hallerberg, Karl J., to Borg-Warner-Stieber GmbH. Sprag type freewheel clutch. 3,844,391, Cl. 192-41.00a.

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Hamada, Osamu, to Sony Corporation. Broadcast receiver. 3,845,394, Cl. 325-455.000.

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Hankison, Paul M. Vehicle heat dissipating and/or inclement weather convenience window operating systems. 3,844,606, Cl. 296-146.000.

Hanneman, Thomas W.; and Cook, Jeffrey A., to Communication Mfg. Co. Interconnecting assembly. 3,845,253, Cl. 179-179.000.

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Hansen, Elmar, to Dako-Werkzeugfabriken David Kotthaus KG. Pipe necking apparatus. 3,844,149, Cl. 72-71.000.

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Harrell, Vernon. Collapsible umbrella. 3,844,301, Cl. 135-20.00r.

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Harris, Thomas G., to Armstrong Cork Company. Factice-like materials based on polyesters. 3,845,020, Cl. 260-75.0tm.

Harrison, David E., to Beneke Davison, Beatrice Foods Co. Method of making a soft integral-skin foam seat. 3,845,183, Cl. 264-46.600.

Harrison, Emmett S., to Curtiss-Wright Corporation. Gas turbine start-up fuel control system. 3,844,112, Cl. 60-39.140.

Harrison, Eugene E. Foundation mat repair. 3,844,128, Cl. 61-50.000.

Hart, Gary A., to International Business Machines Corporation. Head to track alignment in a rotating head magnetic tape unit. 3,845,500, Cl. 360-77.000.

Hart, Herbert J., to Schlumberger Technology Corporation. High-resolution magnetic anomaly detector for well bore piping. 3,845,381, Cl. 324-34.00r.

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Hausberg, Gerhard; and Hegemann, Karl-Rudolf, to Bischoff, Gottfried, Bau Kompl. Gasreinigungs- und Wasserruckkuhlanlagen Kommanditgesellschaft. System for discharging flue gases. 3,844,744, Cl. 55-210.000.

Hausberg, Gerhard; and Hegemann, Karl-Rudolf, to Biscoff, Gottfried, Bau Kompl. Gasreinigungs-und Wasserruckkuhlanlagen Kommanditgesellschaft. Gas-purification system for steel-making plant. 3,844,745, Cl. 55-213.000.

Hauser, Raimund: *See—*
Gela, Helmut; Besenmatter, Walter; Scheiber, Robert; Schneider, Fritz; and Rothy, Gerhard, 3,844,658.

Haustein, Heiner; Laube, Dieter; and Bottger, Christa. Adjustable sinker cams on circular knitting machine. 3,844,141, Cl. 66-108.000.

Havas, Janos: *See—*
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Hawley, Charles V., to Xerox Corporation. Gear drive for electrophotographic printing machine. 3,844,179, Cl. 74-409.000.

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Hayashi, Torahiko. Bakery flexible belt carrying plate. 3,844,402, Cl. 198-99.000.

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Hayward, Pierre P. Process for the regulation of the flow in conduits. 3,844,673, Cl. 415-1.000.

Hayward, Robert D.; Chapman, James E.; and Ray, Stanley R., to Gilbert Engineering Company, Inc. Tamper-resistant cable terminator. 3,845,454, Cl. 339-85.000.

Heberlein, Gustave E., Jr.; and Kussy, Frank W., to I-T-E Imperial Corporation. Instantaneous trip means. 3,845,432, Cl. 335-176.000.

Heckelsberg, Louis F., to Phillips Petroleum Company. Alkylating olefins over eta-alumina/zirconia catalyst. 3,845,155, Cl. 260-682.000.

Heckman, Leroy Francis, Jr., to RCA Corporation. Amplifier for amplitude modulated waves with means for improving sideband response. 3,845,403, Cl. 330-31.000.

Hedu, Jon, to Siemon Company, The. Clasp. 3,844,000, Cl. 24-230.0sc.

Hees, Walter: *See—*
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Heiks, Robert Lee: *See—*
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Heimann, Egon. Support device for files. 3,844,415, Cl. 211-43.000.

Heinzmann, Werner: *See—*
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Helke, Robert C., to La Mere Industries, Inc. Burner and ignition system. 3,844,704, Cl. 431-43.000.

Helm, Denis A.; and Zolner, William J., to Thermo Electron Corporation. Fluorescent gas analyzer. 3,845,309, Cl. 250-365.000.

Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Sigg-Grutter, Trudi; and Wild, Jost, to Givaudan Corporation. Novel mercaptoderivatives of ionones and irones. 3,845,134, Cl. 260-586.00r.

Helped Corporation: *See—*
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Henderson, Bennett M.: *See—*
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Henecka, Hans; and Schubert, Hans Werner, to Farbenfabriken Bayer AG. 4-Hydroxy-piperidine derivatives and their preparation. 3,845,062, Cl. 260-293.830.

Henkel & Cie GmbH: *See—*
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Henrick, Clive A., to Zoecon Corporation. Phenylheptadienoates. 3,845,089, Cl. 260-410.90r.

Henrickson, Kenneth E.; Keidl, Steven D.; and Lopour, Warren A., to International Business Machines Corporation. Analog stepping motor control system. 3,845,378, Cl. 318-685.000.

Hentschel, Peter: *See—*
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Herrbrich, Bernd, to Porsche, Dr. Ing. H.c.F., K.G. Control device for a cleaning installation inserted into the exhaust gas system. 3,844,119, Cl. 60-288.000.

Hess, Bernhard; Raichle, Karl; Rudolph, Hans; and Fuhr, Karl, to Bayer Aktiengesellschaft. Storage-stable moulding and coating compositions. 3,845,162, Cl. 260-863.000.

Hess, Hans; Mueller, Guenther; and Stolte, Horst, to Ciba-Geigy Corporation. Flowable pancreatin preparation of low germ content, and a process for its manufacture. 3,844,891, Cl. 195-68.000.

Hess, Hermann: *See—*
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Heusser, Jean; and Glasbrenner, Max, to Hommel Aktiengesellschaft. Pharmaceutical preparation for therapeutic treatment, and method of carrying out the apeutic treatments. 3,845,209, Cl. 424-254.000.

Hey, Hansjorg; and Arpe, Hans-Jurgen, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of sorbic acid. 3,845,118, Cl. 260-526.00n.

Heyne, Carl J., III, to Westinghouse Electric Corporation. Starting control for brushless synchronous motors. 3,845,369, Cl. 318-174.000.

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Hicks, William T., to Du Pont de Nemours, E. I., and Company. Glass ceramic capacitors with tenary alloy electrodes and method of making the same. 3,845,365, Cl. 317-258.000.

Hickson, Donald A., to Chevron Research Company. Layered clay minerals and processes for using. 3,844,978, Cl. 252-455.00r.

Hickson, Donald A., to Chevron Research Company. Layered clay minerals, catalysts, and processes for using. 3,844,979, Cl. 252-455.00r.

Hightower, William G., to Ferromet, Inc. Hammer nill rotor assembly. 3,844,494, Cl. 241-197.000.

Higuchi, Masaru; and Arimoto, Kyozo, to Daicel Ltd. Process for preparing the methacrylate esters of multibrominated phenol derivatives. 3,845,102, Cl. 260-479.00r.

Hilgemann, Hans; and Gettman, Herman. Method of operating public bath and the like. 3,844,338, Cl. 165-3.000.

Hill, Robert E. Gas supply system. 3,844,306, Cl. 137-256.000.

Hill, William J.: *See—*
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Himi, Hitoshi, to Kabushiki Kaisha Meidensha. Bus-bar connection apparatus for an electrical machinery of metal clad type. 3,845,458, Cl. 339-117.00r.

Hind, Hobart M. Support means. 3,844,471, Cl. 229-30.000.

Hinds, Walter E.: *See—*
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Hirano, Osamu; Kawasaki, Junichiro; Suzuki, Tokuhiro; Yamane, Motoi; and Takemoto, Noboru, to Nippon Kokan Kabushiki Kaisha. Oscillating type automatic arc welding apparatus. 3,845,271, Cl. 219-124.000.

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Hoehn, Marvin M.: *See—*
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Hofer, Wolfgang, to Bayer Aktiengesellschaft. Tetramethyl-dithiol-pyrophosphoric acid ester and method of preparation. 3,845,170, Cl. 260-933.000.

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Hoffmann, Werner; and Rischer, Roman, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of beta-ionones. 3,845,135, Cl. 260-586.00c.

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Hogan, John P. Icosahedron disc. 3,844,664, Cl. 403-171.000.

Holland, Melvin G.; Schulz, Manfred B.; and Barrett, Harrison H., to Raytheon Company. Surface acoustic wave phase control device. 3,845,420, Cl. 333-30.00r.

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Holloway, Jack W., to United States of America, Navy. Alternate lead/ceramic stave free-flooded cylindrical transducer. 3,845,333, Cl. 310-9.500.

Holm, Lennart, to Linden-Alimak AB. Hoisting crane with horizontal lattice jib and bravelling carriage. 3,844,417, Cl. 212-18.000.

Holmberg, Gote Eskil Yngve. Lock for a three-point safety belt for motor vehicle. 3,844,001, Cl. 24-233.000.

Holmes, Melvin W. Sky line logging apparatus. 3,844,419, Cl. 212-122.000.

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Honeywell Information Systems Italia: *See—*
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Hong, Jung Pyo, to California Institute of Technology. System and method for character recognition. 3,845,466, Cl. 340-146.30s.

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Hudson, Ralph D. Pintle hook locking device. 3,844,143, Cl. 70-14.000.
Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. 1-[1-(2,3-Dihydro-2-benzofuryl)-alkyl]-4-aminohexahydroisonicotinic acid amides or nitriles. 3,845,060, Cl. 260-293.580.
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Hundstad, Richard L., to Westinghouse Electric Corporation. Contact structures for vacuum-type circuit interrupters having cantilevered-supported annularly-shaped outer arc-running contact surfaces. 3,845,262, Cl. 200-144.00b.
Hunter, Eugene A., to Texas Instruments Incorporated. Time delay relay. 3,845,440, Cl. 337-341.000.
Hunter, George C., to Zygo Corporation. Method and apparatus for aligning an interferometer mirror. 3,844,660, Cl. 356-106.000.
Hurko, Bohdan, to General Electric Company. Composite metal plate surface heating unit. 3,845,273, Cl. 219-462.000.
Hurst, Eric Kenneth; and Woolf, Lewis, Griptight Limited. Infants feeding bottle. 3,844,436, Cl. 215-11.00c.
Hutchins, Thomas B., IV. Bond preparation in electrical deflection-sensitive transducer. 3,844,026, Cl. 29-487.000.
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Irish, Edwin M., Jr., to Gilbreth International Corporation, mesne. Method of forming a closure cap having a heat shrinkable tubular element thereover. 3,844,861, Cl. 156-69.000.
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Ishii, Takemochi; Iguchi, Masakazu; and Koshi, Masaki, to Japan Society for the Promotion of Machine Industry. Guilding system for a computer controlled vehicle. 3,844,224, Cl. 104-244.100.
Ishikawa, Yoshikazu; and Kobayashi, Kazuaki, to Nissan Motor Company. Intake passage-way of a rotary internal combustion engine. 3,844,256, Cl. 123-8.450.
Ishimaru, Shusho: *See—*
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Jackson, Jack M. Closed circuit method of circulating a substantially solid free drilling fluid. 3,844,361, Cl. 175-66.000.
Jackson, Ralph Eugene, to McGraw-Edison Company. Ironer canopy. 3,844,063, Cl. 49-115.000.
Jaeschke, Ralph L., to Eaton Corporation. Electromagnetic coupling having an end mounted field. 3,845,337, Cl. 310-105.000.
Jakobs, Ferdinand; and Sewing, Heinrich. Detonator cap assembly for firearm cartridges. 3,844,216, Cl. 102-46.000.
Jameel, Khaja M.: *See—*
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Japan Gasoline Company, Ltd.: *See—*
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Javick, Richard A.: *See—*
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Jay, Pierre, to Rhone-Progil. Impregnation mixtures for electrical insulating mixtures. 3,844,968, Cl. 252-66.000.
Jay, Richard S., to Jarke Corporation. Modular storage rack for cylindrical loads. 3,844,600, Cl. 294-67.00d.
Jayne, Gerald John Joseph: *See—*
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Jeffery, Jeffery J.; and Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Aqueous coating composition of an epoxy ester resin and a water-dispersible cross-linking agent. 3,844,998, Cl. 260-29.40r.
Jenkins, Dave H., to Lockheed Aircraft Corporation. Air cushion trunk valving system for aircraft. 3,844,509, Cl. 244-100.00a.
Jenkins, Martyn Frederick, to Dunlop Limited. Platform conveyors. 3,844,219, Cl. 104-25.000.
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Jensen, Borge; Fischer, Aksel; and Falck, Rolf Christian Luja. Coupling arrangement for connecting an insulating housing enclosing an electric device to an installation panel duct. 3,844,078, Cl. 52-221.000.
Jeric, Joseph M. Thermocouple test cup and cupholder. 3,844,172, Cl. 73-354.000.
Jerson, Donald D.; and Minter, Herbert F., to Westinghouse Electric Corporation. High temperature-stable abrasion-resistant coatings for conductors. 3,844,834, Cl. 117-226.000.
Jeumont-Schneider: *See—*
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Jirousek, John K.; and Hickman, G. Daniel, to United States of America, Navy. Automatic jammer. 3,845,482, Cl. 343-18.00e.
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Jocsak, William, to Ingersoll-Rand Company. Condenser tube support plate insert. 3,844,588, Cl. 285-162.000.
Johannsmeier, Karl-Heinz, to Kasper Instruments, Inc. Method and means for forming an aligned mask that does not include alignment marks employed in aligning the mask. 3,844,655, Cl. 355-43.000.
Johansson, Bengt. Device for taking caught fish out of the water. 3,844,602, Cl. 294-110.00a.
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Johnson, Frank. Advertising and sales promotion method and apparatus. 3,844,057, Cl. 40-106.220.
Johnson Gage Company, The: *See—*
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Johnson, John W.: *See—*
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Johnson. Marvin M., to Phillips Petroleum Company. Conversion of hydrocarbon oil to a synthetic natural gas. 3,844,734, Cl. 48-213.000.
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Oman, Gary F.; Strojny, Lawrence J.; Froehling, Paul H.; and Buchanan, Stuart R., 3,845,467.
Johnson, Stanley G., to Johnson Gage Company, The. Stud for a movable gaging element and its combination with the gaging element and with a gage. 3,844,046, Cl. 33-147.00m.

Jones, Howard S., Jr.; and Sindoris, Arthur R., to United States of America, Army. Rearmounted forward-looking radio frequency antenna for projectiles. 3,845,488, Cl. 343-708.000.
Jones, Leo V., Jr.: *See—*
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Jones, Loyd W., to Amoco Production Company. Dispersed oil separator. 3,844,743, Cl. 55-174.000.
Jones, Loyd W., to Amoco Production Company. Use of sulfur for combatting oil spills. 3,844,941, Cl. 210-40.000.
Jones, Richard Vaughn, to Millwood Laboratories. Urinometer. 3,844,720, Cl. 23-259.000.
Jones, Robert D.: *See—*
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Jones, Roger D., to Abex Corporation. Brake systems. 3,844,624, Cl. 303-21.00a.
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Jurschak, John J. Signal transmission and surveillance system using an operational telephone line. 3,845,247, Cl. 179-5.00r.
Justice, James W. H., to Westinghouse Electric Corporation. Receiver for an educational branching system. 3,845,498, Cl. 358-11.000.
Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Fuhrmann, Siegfried; Harders, Volkwart; Kruger, Hartmut; and Schwenke, Rudiger, 3,844,587.
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Kamigaito, Osami; and Oyama, Yoichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for pressure sintering a refractory powder. 3,845,185, Cl. 264-86.000.
Kampe, Wolfgang; Fauland, Erich; Thiel, Max; Juhran, Wolfgang; and Stork, Harald, to Boehringer Mannheim GmbH. Novel N(6)-substituted adenosine compounds and therapeutic compositions. 3,845,035, Cl. 260-211.50r.
Kanai, Kenji, to Matsushita Electric Industrial Co., Ltd. Flux scanning transducer having anisotropic soft magnetic inner pole piece. 3,845,503, Cl. 360-115.000.
Kanao, Seizo: *See—*
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Karol, Frederick J., to Union Carbide Corporation. Thermally aged hydride based polymerization catalyst. 3,844,975, Cl. 252-430.000.
Karrip, Alexander A., to Steelcase Inc. Support system for partitions. 3,844,079, Cl. 52-221.000.
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Kashio, Toshio, to Casio Computer Co., Ltd. Time indication apparatus. 3,844,105, Cl. 58-23.00r.
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Bartholome, Ernst; Koehler, Waldemar; Stoeckelmann, Guenter; Schulz, Gerhard; Nagel, Otto; Goetze, Walter; Kasper, Werner; Dreher, Erich; and Dahlinger, Roland, 3,845,144.
Kasten, John E. Forage wagon with hinged roof. 3,844,604, Cl. 296-26.000.
Katayanagi, Akira. Flotation separation of feldspar. 3,844,939, Cl. 209-166.000.
Katsuragawa Denki Kabushiki Kaisha: *See—*
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Katsuta, Takashi; Hattori, Masataka; Inaba, Masao; Iwamoto, Minao; and Suzuki, Takashi, to Nippon Electric Company, Limited. Video recording and/or reproducing apparatus having an automatic tape threading mechanism. 3,845,501, Cl. 360-85.000.
Katz, Bernard. Adjustable time constant operating circuit. 3,845,398, Cl. 328-127.000.
Katz, Carlos: *See—*
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Katz, Helmut: *See—*
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Kaufman, Lawrence L.; and Bienenfeld, Arthur. Glass sheet heating method. 3,844,757, Cl. 65-114.000.
Kawagoe, Hiroto: *See—*
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Kawakami, Koichi, to Yoshida Kogyo Kabushiki Kaisha. Slider assembly device. 3,844,015, Cl. 29-207.5sl.
Kawakami, Koichi, to Yoshida Kogyo Kabushiki Kaisha. Slider holder for slide fasteners. 3,844,016, Cl. 29-207.5sl.
Kawamata, Masaru; and Ozeki, Mineo, to Kabushiki Kaisha Meidensha. Chopper circuit for D.C. motor. 3,845,379, Cl. 321-45.00c.
Kawamura, Nobuo: *See—*
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Kawamura, Seiichi, to Hitachi, Ltd. Preliminary compressor lubricating device. 3,844,684, Cl. 417-13.000.
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Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light-measuring circuits. 3,845,360, Cl. 317-124.000.
Kawashima, Kazumi, to Matsushita Electric Industrial Co., Ltd. Pulse signal transmitter and receiver. 3,845,473, Cl. 340-167.00r.
Kawaziri, Kazuhiro: *See—*
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Kay, Francis Xavier, to Instruments and Movements Limited. Fluidic proximity sensing devices. 3,844,161, Cl. 73-37.500.
Kay, Robert E.; and Walwick, Earle R., to Philip-Ford Corporation. Solar cell with organic semiconductor contained in a gel. 3,844,843, Cl. 136-206.000.
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Keilholz, Friedrich, to Bilstein, August, Firma. Hydraulic shock absorber. 3,844,544, Cl. 267-64.00r.
Keller, Hans, to ITT Industries, Inc. Integrated circuit for electronic clocks. 3,845,367, Cl. 318-127.000.
Keller, William John, to Du Pont de Nemours, E. I., and Company. Continuous process for recycling solvent and rhodium catalyst in producing 1,4-hexadiene. 3,845,154, Cl. 260-680.00b.
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Kelly, Edward G.; Dean, Theodore E.; and Tuttle, Frederick S., to GAF Corporation. Sheet vinyl wall trimmer tool. 3,844,038, Cl. 30-293.000.
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Kempermann, Theo; Eholzer, Ulrich; Westlinning, Hermann; and Fleischhauer, Horst, to Bayer Aktiengesellschaft and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the vulcanisation of natural and/or synthetic rubbers made from halogenfree dienes. 3,844,970, Cl. 252-182.000.

Kendy, Leonard; and Frey, Richard L., to Hughes Aircraft Company. Laser-sight and computer for anti-aircraft gun fire control system. 3,845,276, Cl. 235-61.50s.

Kennecot Copper Corporation: *See—*
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Kerr, David L.: *See—*
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Kesterson, Albert O.; Lancia, Frederick N.; and Liebert, Ralph C., to Liebert Corporation. Environmental condition control. 3,844,475, Cl. 236-1.00e.

Kiela, Gene F., to Joa, Curt G., Inc. Sanitary pad and method of manufacture. 3,844,288, Cl. 128-287.000.

Kienzle, Jean Andre Paul; and Cabut, Louis Antoine, to Ugine Kuhlmann. Anthraquinone dyestuffs. 3,845,081, Cl. 260-377.000.

Kikuchi, Masao: *See—*
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Kimberly-Clark Corporation: *See—*
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King, Frederick E., to Jockey International, Inc. Knit boxer shorts. 3,844,282, Cl. 128-159.000.

King, Jack C. Down-rigger reel. 3,844,058, Cl. 43-27.400.

King, James R.: *See—*
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Kiovsky, Joseph R., to Norton Company. Catalyst for decomposition of hydrocarbons and process. 3,845,200, Cl. 423-653.000.

Kirby, David B.; and Kroening, Roger D., to Dow Chemical Company, The. Method of treating clay to improve optical properties of paper. 3,844,828, Cl. 117-152.000.

Kitagawa, Sumio: *See—*
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,845,057.

Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, to Fuji Photo Film Co., Ltd. Method of reproducing magnetization pattern. 3,844,907, Cl. 204-12.000.

Kitamura, Takemi; and Takaki, Ason. Tape recorder automatic stop mechanism. 3,844,464, Cl. 226-174.000.

Kitoku Co., Ltd.: *See—*
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Klarke, Phillip. Pump station test stand assembly. 3,844,516, Cl. 248-88.000.

Klein, Harry, to Telesco Brophey Limited. Collapsible umbrella. 3,844,302, Cl. 135-26.000.

Kliemann, Siegfried; and Vodicka, Vladimir, to Balche-Durr Aktiengesellschaft. Cooling tower. 3,844,344, Cl. 165-110.000.

Klimek, Norbert Max; and Huber, Manfred Anton, to English Numbering Machines Limited. Spool mount for magnetic tape recording and/or playback machines. 3,844,505, Cl. 242-206.000.

Kloker, Werner; and Beckers, Johannes, to Bayer Aktiengesellschaft. Disperse (colloid) mixtures of inorganic thickener and polyester resin. 3,844,995, Cl. 260-22.0cb.

Klusmier, Kenneth L.: *See—*
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Kneebone, Clarence H. Lock for a movable closure. 3,844,145, Cl. 70-90.000.

Knight, Bruce L.; and Rhudy, John S., to Marathon Oil Company. Oil recovery using polymer preslug. 3,844,350, Cl. 166-273.000.

Knol, Henricus Joannes, to Lummus Company, The. Pipe support for use in a heating device. 3,844,515, Cl. 248-71.000.

Kobayashi, Daisaku: *See—*
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Kobayashi, Kazuaki: *See—*
Ishikawa, Yoshikazu; and Kobayashi, Kazuaki, 3,844,256.

Kobe Steel, Limited: *See—*
Yamakoshi, Noboru; Kaneda, Tsugio; Yanagi, Yoshichica; Narita, Kiichi; and Fujita, Tatsu, 3,844,773.

Koch, Gary L.: *See—*
Sumner, William D.; and Koch, Gary L., 3,844,312.

Kochansky, Jan: *See—*
Roelofs, Wendell; Kochansky, Jan; and Carde, Ring, 3,845,108.

Kocsis, Joseph: *See—*
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Kodera, Seiichi: *See—*
Watase, Fumio; Nakauchi, Shunsaku; Kodera, Seiichi; and Namikawa, Mamoru, 3,845,361.

Koehler, Waldemar: *See—*
Bartholome, Ernst; Koehler, Waldemar; Stoeckelmann, Guenter; Schulz, Gerhard; Nagel, Otto; Goetze, Walter; Kasper, Werner; Dreher, Erich; and Dahlinger, Roland, 3,845,144.

Koenig, Horst: *See—*
Lebkuecher, Rolf; Koenig, Horst; Amann, August; Giertz, Hubert; and Schuster, Joerg, 3,845,050.

Koff, Bernard L.: *See—*
Widlansky, William; and Koff, Bernard L., 3,844,110.

Kohlmannsperger, Josef, to AGFA-Gevaert Aktiengesellschaft. Thermomagnetic imaging apparatus. 3,845,306, Cl. 250-316.000.

Kohn, Gustave K.: *See—*
Brown, Melancthon S., 3,845,101.

Kojima, Jiro. Weld bead removing apparatus. 3,844,007, Cl. 29-33.00a.

Kolesnikov, Alexandr Pavlovich; Schegolev, Gleb Stepanovich; Granovsky, Semen Abramovich; Stankevich, Ljudmila Ivanovna; and Smolyarov, Ljustien Grigorievich; deceased (by Sheshuko, Elena Gavrilovna). Runner of hydraulic machine having rotatable blades. 3,44,681, Cl. 416-157.000.

Kollar, John, to Halcon International, Inc. Process for preparation of phthalic acids. 3,845,117, Cl. 260-524.00r.

Kondo, Toshio: *See—*
Tamura, Hifumi; Nakamura, Kazumitsu; and Kondo, Toshio, 3,845,304.

Kondo, Yoshikazu; Yamazaki, Harumichi; and Akinaga, Akito, to Bridgestone Tire Company Limited. Anti-skid traction device for vehicle tires. 3,844,324, Cl. 152-239.000.

Konisi, Kenzi; Iwatani, Katumi; and Simizu, Tosio, to Omron Tateisi Electronics Co. System for correcting errors in pulse data. 3,845,281, Cl. 235-92.01p.

Konvalin, Robert L. Adjustable leg brace. 3,844,279, Cl. 128-80.00f.

Koop, Francis D., Jr.; Woods, John F.; Farmer, Kenneth J.; and Harbin, Wayne D., to Marathon Manufacturing Company. Floating drilling platform with quick disconnect legs. 3,844,127, Cl. 61-46.500.

Kopczynski, John F. Helical pump. 3,844,690, Cl. 418-48.000.

Kopf, David, Systems: *See—*
Kopf, J. David; and Van den Heuvel, Raymond C., 3,844,940.

Kopf, J. David; and Van den Heuvel, Raymond C., to Kopf, David, Systems. System for measuring ultrafiltration rate. 3,844,940, Cl. 210-22.000.

Kornylak, Andrew T., to Kornylak Corporation. Rotating cable conveyor. 3,844,406, Cl. 198-213.000.

Kornylak Corporation: *See—*
Kornylak, Andrew T., 3,844,406.

Kortmann, Wilfried: *See—*
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Koshi, Masaki: *See—*
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Kosmala, James M.: *See—*
Wright, James A.; and Kosmala, James M., 3,844,573.

Kosono, Kazuhiro; and Kosono, Yasukazu. Roller skate toe stop assembly. 3,844,574, Cl. 280-11.200.

Kosono, Yasukazu: *See—*
Kosono, Kazuhiro; and Kosono, Yasukazu, 3,844,574.

Kosonocky, Walter Frank: *See—*
Williams, Brown F.; and Kosonocky, Walter Frank, 3,845,295.

Kostman, Wilmer A., to Tegtmeier & Sons, Inc. Dump box farm wagon. 3,844,617, Cl. 298-11.000.

Kotalik, Richard J.: *See—*
Brushwyler, Gordon R.; and Kotalik, Richard J., 3,845,376.

Kothari, Tushar D.: *See—*
Brooks, Kenneth R.; Dave, Axaybabu M.; and Kothari, Tushar D., 3,845,340.

Kothe, Erich, to Controls Company of America. Low profile pressure switch with plunger adjusting means. 3,845,265, Cl. 200-835.000.

Kough, John K.: *See—*
Martin, Otis M.; Kough, John K.; and Miller, Silas M., 3,844,082.

Koury, Frederic: *See—*
Waymouth, John F.; and Koury, Frederic, 3,845,342.

Koyama, Akira; and Mochizuki, Yoshinari, to Hope Kabushiki Kaisha. Ski boot. 3,844,055, Cl. 36-2.5al.

Koziol, Walter, to Beatrice Foods Co. Lamp vent structure. 3,845,292, Cl. 240-51.000.

Krabetz, Richard; and Engelbach, Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of acrylic acid by oxidation of acrolein. 3,845,120, Cl. 260-530.00n.

Kraftwerk Union Aktiengesellschaft: *See—*
Remberg, Axel, 3,844,675.

Kramer, Larry J., to General Electric Company. Method for continuous preparation of crystalline solids. 3,845,195, Cl. 423-308.000.

Kramer, Stanley J.; and Cebular, Edward J. Hydraulic motor and drive attachment. 3,844,197, Cl. 91-52.000.

Kramoski, John N. Anchor caddy. 3,843,999, Cl. 24-134.0kc.

Kranz, Quentin R.: *See—*
Trzyna, Charles J.; and Kranz, Quentin R., 3,844,922.

Kranz, Vladimir. Inflatable hall. 3,844,339, Cl. 165-46.000.

Kratel, Gunter: *See—*
Lipp, Alfred; and Kratel, Gunter, 3,844,910.

Kraulits, John E., to Arrow-Hart, Inc. Switch operator with tripping means. 3,845,433, Cl. 335-254.000.

Krause, Richard P. Support for roll of paper and other articles. 3,844,500, Cl. 242-55.540.

Kreckel, Douglas A.: *See*—
Bailey, Raymond E.; and Kreckel, Douglas A., 3,844,906.

Kreipe, Carl-Eberhard; and Peckmann, Heinz, to Alcan Aluminumwerke GmbH. Pressure containers. 3,844,355, Cl. 169-31.00r.

Krendel, Leonid; Nikonov, Vladimir Filippovich; Ognevsky, Viktor Alexeevich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Palkin, Valery Evseevich; Pakhomov, Anatoly Vladimirovich; Stepin, Anatoly Loginovich; Trofimov, Oleg Fedorovich; Shpelyakovsky, Konstantin Zakharovich; Ryskind, Alexandr Moiseevich; Shklyarov, Isaak Nakhimovich; Rabin, Moisei Osipovich; Kalner, Veniamin Davydovich; and Fishkis, Mikhail Mironovich. Method of heat treatment of housings. 3,844,852, Cl. 148-134.000.

Krenke, Gerald; and Layton, Howard M., to Interlab, Inc. Temperature controller for hybrid process tanks. 3,845,274, Cl. 219-499.000.

Kresge, James S.; and Miske, Stanley A., Jr., to General Electric Company. Frequency sensitive preionizer. 3,845,345, Cl. 313-325.000.

Kroening, Roger D.: *See*—
Kirby, David B.; and Kroening, Roger D., 3,844,828.

Kronick, Melvyn H.; and Wilson, Samuel H., to United States of America, Health, Education and Welfare. Apparatus for performing assays on reactions that produce radioactive gases. 3,844,894, Cl. 195-127.000.

Kropp, Rudolf: *See*—
Reicheneder, Franz; Kropp, Rudolf; and Fischer, Adolf, 3,845,054.

Kroy, Walter: *See*—
Erben, Klaus-Dieter; Kroy, Walter; and Mehnert, Walter E., 3,845,411.

Krueger, Harvey R.; Neumann, Charles G.; and Peterson, Leroy, to Reynolds Products, Inc. Auger type ice cube maker. 3,844,134, Cl. 62-354.000.

Kruger, Hartmut: *See*—
Fuhrmann, Siegfried; Harders, Volkwart; Kruger, Hartmut; and Schwenke, Rudiger, 3,844,587.

Kruger, James Brompton; and Cooper, Joseph, to Scovill Manufacturing Company. Multi-compartment storage structure. 3,844,634, Cl. 312-351.000.

Kruis, August; Manhard, Hans; and Schliebener, Claus, to Linde Aktiengesellschaft. Process for the drying of cracking gases. 3,844,736, Cl. 55-32.000.

Krups, Robert: *See*—
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Kuhle, Engelbert: *See*—
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Kuligin, Georgy Alexandrovich: *See*—
Tiranov, Gennady Petrovich; Kuligin, Georgy Alexandrovich; and Dzhermakian, Karen Jurievich, 3,844,621.

Kumok, Simona Tevievna: *See*—
Gurvich, Yakov Abramovich; Grinberg, Alexandr Afroimovich; Styskin, Evgeny Lvovich; Kumok, Simona Tevievna; Sobolev, Valerian Mikhailovich; Sorokin, Eduard Sergeevich; Shelkova, Irina Sergeevna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich;and Rutman, Grigory Iosifovich, 3,845,142.

Kunak, Anthony F.: *See*—
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Kunert, Heinz: *See*—
Sauer, Gerd; Kunert, Heinz; and Moebs, Heinz, 3,845,489.

Kungl. Karolinska Mediko. Kirurgeska institutet: *See*—
Linderoth, Kjell Uno, 3,845,302.

Kuntzleman, Harry C.: *See*—
Braun, Roland J.; Kuntzleman, Harry C.; and Meier, Herbert E., 3,845,445.

Kunze, Wilhelm: *See*—
Stachel, Adolf; Beyerle, Rudi; Kunze, Wilhelm; Nitz, Rolf-Eberhard; and Scholtholt, Josef, 3,845,052.

Kurachi, Masami Mike. Live bait fishing lure. 3,844,060, Cl. 43-41.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Ishiguro, Tadashi; Okagami, Akio; Igeta, Shinichi; Gomi, Shimpei; and Takahashi, Masaaki, 3,844,931.

Kuribayashi, Hiroshi: *See*—
Gomi, Shimpei; Takahashi, Masaaki; Ishiguro, Tadashi; Okagami, Akio; Uemoto, Kunihiko; and Kuribayashi, Hiroshi, 3,844,932.

Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. Polycyanodithiino aromatic N-heterocyclic compounds. 3,845,068, Cl. 260-304.000.

Kuroda, Nobukazu, to Sony Corporation. Nickel-iron magnetic alloys comprising chromium and molybdenum. 3,844,849, Cl. 148-31.550.

Kusak, Meilute O., to Standard Oil Company. Process for conversion of para-xylene to high purity dimethyl terephthalate. 3,845,100, Cl. 260-475.00b.

Kussy, Frank W.: *See*—
Heberlein, Gustave E., Jr.; and Kussy, Frank W., 3,845,432.

Kutash, Richard A., to Bendix Corporation, The. Method of making a universal flexural assembly. 3,844,022, Cl. 29-436.000.

Kutryk, Edward Adam. Pollution control apparatus. 3,844,746, Cl. 55-228.000.

Kwan, James S., 20% to Lee, Raymond, Organization, Inc. Shoe anti-slip device. 3,844,056, Cl. 36-67.00d.

La Foret, Meudon: *See*—
Fauran, Claude P.; Raynaud, Guy M.; Eberle, Jeannine A.; Pourrias, Bernard M.; La Foret, Meudon; and Le Cloarec, Alberty Y., 3,845,046.

La Mere Industries, Inc.: *See*—
Helke, Robert C., 3,844,704.

La Telephonie Industrielle et Commerciale "Telic": *See*—
Schneider, Gilbert, 3,845,254.

Laajala, Gene W. Device for transporting turkey feed to a turkey feeder. 3,844,433, Cl. 214-522.000.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Thermoset molding powders employing glycidyl methacrylate functional polymer and dibasic acid crosslinking agent and moldings thereof. 3,845,010, Cl. 260-42.180.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Thermoset molding powders employing glycidyl methacrylate-functional polymers and polyanhybide crosslinking agents and moldings thereof. 3,845,016, Cl. 260-42.180.

Laby, Ralph Henry, to Commonwealth Scientific and Industrial Research Organization. Device for administration to muninants. 3,844,285, Cl. 128-260.000.

LaDue, Augustus W.: *See*—
Grubb, Everett F.; and LaDue, Augustus W., 3,844,754.

Lake, James Douglas. Method of installing a hearing aid. 3,844,271, Cl. 128-1.000.

Lambert, Andre: *See*—
Soury, Jean-Pierre; Lambert, Andre; and Barandon, Rene, 3,844,307.

Lamer, Gerald P., to Case, J. I., Company. Telescoping jib assembly. 3,844,418, Cl. 212-55.000.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine, especially of trochoidal construction. 3,844,694, Cl. 418-149.000.

Lammers, Uve H. W. Radio direction finding system. 3,845,487, Cl. 343-113.0de.

Lamontagne, Roger A., 30% to Lee, Raymond, Organization, Inc., The. Device for protecting a skater from effects of spill. 3,844,554, Cl. 272-1.00r.

Lamparsky, Dietmar: *See*—
Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Sigg-Grutter, Trudi; and Wild, Jost, 3,845,134.

Lancia, Frederick N.: *See*—
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Landis, Abraham L.: *See*—
Bilow, Norman; Landis, Abraham L.; and Miller, Leroy J., 3,845,018.

Lane, George A.: *See*—
Plomer, John J.; Filter, Harold E.; and Lane, George A., 3,844,855.

Lane, Georges A.: *See*—
Flynn, James P.; Lane, Georges A.; and Plomer, John J., 3,844,856.

Lane, Marvin; and Willard, E. Thomas, to Taylor, Nelson A., Co., Inc. Windshield structure. 3,843,982, Cl. 9-1.00r.

Lang, David M.; and Nelmark, Jack D., to Bucyrus-Erie Company. Tool wrench. 3,844,547, Cl. 269-25.000.

Lange, Clark V.: *See*—
Jackson, Earl V.; Schoppe, Wayne F.; Squassoni, Gino F.; Warter, Peter J.; Herr, Gerald A.; Hoesly, David D.; Randall, John M.; Schroeder, Russell G., II; Webb, Douglas D.; Lange, Clark V.; and Kelsch, Robert J., 3,844,651.

Lange, Ronald Edwin; Couleur, John F.; and Pine, Donald L., to Honeywell Information Systems, Inc. Cache store clearing operation for multiprocessor mode. 3,845,474, Cl. 340-172.500.

Langenstein & Schemann Aktiengesellschaft: *See*—
Bachmann, Horst, 3,844,157.

Langerwerf, Josephus Sychbertus Adrianus, to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid. Method for halogenizing surfaces of synthetic and/or natural rubber material. 3,845,031, Cl. 260-96.000.

Lanier, Theodore, 20% to Lee, Raymond, Organization, Inc., The. Hydro-filtration apparatus. 3,844,748, Cl. 55-255.000.

Lanik, John H., to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,844,821, Cl. 117-72.000.

Lanoux, Sigred B.; Ellzey, Samuel E., Jr.; Drake, George L., Jr.; and Reeves, Wilson A., to United States of America, Agriculture. Phosphinidynetrimethanol triacetate. 3,845,107, Cl. 260-488.00j.

Lanvin, Jeanne, SA: *See*—
Lanvin, Lucie, 3,844,458.

Lanvin, Lucie, to Lanvin, Jeanne, SA. Wrist watch bracelet. 3,844,458, Cl. 224-4.00j.

Lapidus, Milton: *See*—
Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,845,109.

Lapkin, Milton: *See*—
Wojtowicz, John A.; Lapkin, Milton; and Puar, Mohindar S., 3,845,145.

Lardenois, Robert A. Cylindrical hair brush. 3,843,990, Cl. 15-159.00r.

Larsen, Eric R., to Dow Chemical Company, The. Halogenated fire extinguishing agent for total flooding system. 3,844,354, Cl. 169-46.000.

Larsen, Ole Jeppe Fjord. Device for producing and protecting deposits of sedimentary material on the floor of bodies of water. 3,844,123, Cl. 61i3.000.

Larson, Kenneth C.: *See—*
Meisel, Frederick W., Jr.; and Larson, Kenneth C., 3,844,880.

Lasson, Gerald A.: *See—*
Donoghue, John Francis; Forney, Dan Edward; Heiks, Robert Lee; Lasson, Gerald A.; McCall, Robert Eugene; and Rich, Charles Ray, 3,844,870.

Last, Anthony J., to Ontario Research Foundation. Ultrasonic motor. 3,845,332, Cl. 310-8.700.

Lasutkin, Gennady Vasilievich: *See—*
Pershin, Valentin Andreevich; Shpadi, Evgeny Ivanovich; Lasutkin, Gennady Vasilievich; Pichugin, Alexei Dmitrievich; and Trubin, Vladimir Nikolaevich, 3,844,545.

Laube, Dieter: *See—*
Haustein, Heiner; Laube, Dieter; and Bottger, Christa, 3,844,141.

Laucks, Howard H.: *See—*
Hague, Robert Z.; Hantman, Edwin F.; Laucks, Howard H.; Loos, George J.; Marsciano, Matthew F.; and Mastropole, Alfred J., 3,844,028.

Laussermair, Friedrich, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Process for the manufacture of a rotor or shaft of low deformability. 3,844,730, Cl. 29-446.000.

Lautzenhiser, Argyle Glenn, to Little, Arthur D., Inc. Coin selector and sorter. 3,844,297, Cl. 133-1.00a.

Lawson, John B., to Lawson-Hemphill, Inc. Method and apparatus for handling yarn. 3,844,504, Cl. 242-47.010.

Lawson, Lance C., to Borg-Warner Corporation. Fault protection circuit for an adjustable motorized hospital bed. 3,845,355, Cl. 317-18.00a.

Lawson-Hemphill, Inc.: *See—*
Lawson, John B., 3,844,504.

Layne, Gilbert S.; Bangs, Leigh B.; and Huml, James O., to Dow Chemical Company, The. Method for condensing metal vapor mixtures. 3,844,771, Cl. 75-68.00b.

Layton, Howard M.: *See—*
Krenke, Gerald; and Layton, Howard M., 3,845,274.

Le Blanc, Jack J., to Carrier Corporation. Capacity control device for reciprocating compressor. 3,844,686, Cl. 417-298.000.

Le Cloarec, Alberty Y.: *See—*
Fauran, Claude P.; Raynaud, Guy M.; Eberle, Jeannine A.; Pourrias, Bernard M.; La Foret, Meudon; and Le Cloarec, Alberty Y., 3,845,046.

Le Craw, Roy Conway; Levinstein, Hyman Joseph; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Method for controlling magnetization in garnet material and devices so produced. 3,845,477, Cl. 340-174.0tf.

Lebkuecher, Rolf; Koenig, Horst; Amann, August; Giertz, Hubert; and Schuster, Joerg, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Dihydropyridazone compound substituted by paraimidazolidonylphenyl. 3,845,050, Cl. 260-250.00a.

Lechner, Karl. Device for the soft and elastic bearing support of shafts rotating at high speeds. 3,844,630, Cl. 308-184.000.

Lee, Raymond, Organization, Inc.: *See—*
Kwan, James S., 3,844,056.

Lee, Raymond, Organization, Inc., The: *See—*
Armstrong, Paul H., 3,844,296.
Lamontagne, Roger A., 3,844,554.
Lanier, Theodore, 3,844,748.

Lee-Norse Company: *See—*
Delli-Gatti, Frank A., Jr., 3,844,618.

Lefebvre, Jean Henri: *See—*
Py, Alphonse Benjamin; Lefebvre, Jean Henri; and Pichouron, Jean-Claude, 3,844,331.

Lehara, Werner, Inc.: *See—*
Voshel, Gerald Lee, 3,844,708.

Leidich, Arthur John, to RCA Corporation. Composite transistor device with over current protection. 3,845,405, Cl. 330-207.00p.

LEK tovarna farmacevtskih in Kemicnih izdelkov: *See—*
Zupancic, Boris, 3,845,122.

Lekarski, Simeon: *See—*
Gachot, Jean; and Lekarski, Simeon, 3,844,178.

Leland, Ragnvald G. Floor mop having pivotable handle for changing directions. 3,843,993, Cl. 15-231.000.

Lembert, Seymour, to International Flavors & Fragrances Inc. 1,5,9-Trimethylcyclododecatriene derivatives. 3,845,078, Cl. 260-348.00c.

Lembo, Sabino; Viterbo, Rene; Perri, Giulio Cesare; and Mastursi, Michele. N-(3,4 dihydro naphthyl)-N'phenyl piperazines. 3,845,058, Cl. 260-268.0bc.

Lengemann, Robert A.: *See—*
Vickers, Anthony G.; and Lengemann, Robert A., 3,844,902.

Lenoir, Francis X.; Metz, Bruce E.; Brooks, Ashley A.; and Hill, William J., to Hercules Incorporated. Heat sealing apparatus. 3,844,872, Cl. 156-498.000.

Leonard, William A.; Kunak, Anthony F.; and Burns, Cecil M., to Lowenstein, M., & Sons, Inc. Precision deposition onto a textile substrate. 3,844,813, Cl. 117-7.000.

Leonhardt, Horst M., to International Shoe Machine Corporation. Machine for roughing the margin of an upper of a shoe assembly. 3,843,985, Cl. 12-1.00r.

Lepp, Vladimir Romanovich; Sibgatulin, Kharis Malikovich; and Cherkasov, Jury Nikolaevich. Current stabilizer having a saturable reactor in the mode of forced magnetization. 3,845,380, Cl. 323-7.000.

Leroy, Jean-Pierre Henri Michel, to Societe Honeywell Bull (Societe Anonyme). Automatic functional margin plotter. 3,845,285, Cl. 235-151.000.

Leroy, Pierre; Cadart, Michel; Morlet, Jean Georges; and Saleil, Jean, to Creusot-Loire. Process for refining alloy steels containing chromium and including stainless steels. 3,844,768, Cl. 75-59.000.

Lesser, Jerome M. Method for washing vehicles with oscillating, flexible strips. 3,844,836, Cl. 134-6.000.

Lever Brothers Company: *See—*
De Groot, Willibrordus Theodorus Maria, 3,845,087.
Griffiths, Joseph John; and Wilde, Raymond John, 3,844,969.
Sharpe, Anthony Nelson, 3,844,896.

Levesque, Charles J.: *See—*
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Levinstein, Hyman Joseph: *See—*
Le Craw, Roy Conway; Levinstein, Hyman Joseph; and Wolfe, Raymond, 3,845,477.

Lewis, Michael. Object segregating machanism. 3,844,411, Cl. 209-73.000.

Ley, Anthony John; and Dorey, Howard Anthony, to Solartron Electronic Group Limited, The. RMS converter. 3,845,388, Cl. 324-106.000.

Liakumovich, Alexandr Grigorievich: *See—*
Gurvich, Yakov Abramovich; Grinberg, Alexandr Afroimovich; Styskin, Evgeny Lvovich; Kumok, Simona Tevievna; Sobolev, Valerian Mikhailovich; Sorokin, Eduard Sergeevich; Shelkova, Irina Sergeevna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich;and Rutman, Grigory Iosifovich, 3,845,142.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Schulz, Jurgen, 3,845,397.

Liebert Corporation: *See—*
Kesterson, Albert O.; Lancia, Frederick N.; and Liebert, Ralph C., 3,844,475.

Liebert, Ralph C.: *See—*
Kesterson, Albert O.; Lancia, Frederick N.; and Liebert, Ralph C., 3,844,475.

Liebl, Helmut, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Microbeam probe apparatus. 3,845,305, Cl. 250-309.000.

Liebman, Theodore. Line synchronized strobe light. 3,845,349, Cl. 315-200.00a.

Lilly, Eli, and Company: *See—*
Hatfield, Lowell D., 3,845,043.
Miller, Joseph A., Jr., 3,845,192.
Szinai, Stephen Slomo, 3,845,131.
Williams, Robert H.; Hoehn, Marvin M.; and Michel, Karl-Heinz, 3,845,203.

Lim, Franklin: *See—*
Sodickson, Lester A.; and Lim, Franklin, 3,844,717.

Limberg, Klaus, to Krups, Robert. Dry shaver. 3,844,034, Cl. 30-43.920.

Lincoln, David: *See—*
Delanty, John T.; and Lincoln, David, 3,843,971.

Lincoln, Frank H., Jr.; Pike, John F.; and Youngdale, Gilbert A. 15-Lower alkoxy PGF compounds. 3,845,115, Cl. 260-514.00d.

Linde Aktiengesellschaft: *See—*
Kruis, August; Manhard, Hans; and Schliebener, Claus, 3,844,736.

Lindemann, Martin K.; and Volpe, Rocco P., to Air Products and Chemical, Inc., mesne. Aqueous paint compositions of vinyl acetate-ethylene copolymer latices. 3,844,990, Cl. 260-17.00r.

Linden-Alimak AB: *See—*
Holm, Lennart, 3,844,417.

Linderoth, Kjell Uno, to Kungl. Karolinska Mediko. Kirurgeska institutet. Device for determining and indicating mass numbers in a mass spectrometer. 3,845,302, Cl. 250-294.000.

Lindwall, Richard C.; and Crocker, Richard E., to Atlantic Richfield Company. Apparatus for chlorinating saturated hydrocarbons. 3,845,317, Cl. 250-527.000.

Lingenfelder, Paul G.; and Fox, Jerry D., to United States of America, Navy, mesne. Beam doubler. 3,844,638, Cl. 350-171.000.

Lingnau, Josef, to Gestra-KSB Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft. Method of making a pressure actuated control device. 3,844,025, Cl. 29-482.000.

Lipp, Alfred; and Kratel, Gunter, to Elektroschmelzwerk Kempten GmbH. Process for the production of metal coatings. 3,844,910, Cl. 204-45.00r.

Litsch, Emil C. Shock absorbing horseshoe pit. 3,844,560, Cl. 273-104.000.

Little, Arthur D., Inc.: *See—*
Lautzenhiser, Argyle Glenn, 3,844,297.

Littlechild, James Edgar; and Gillies, George Marshall, to United Kingdom Atomic Energy Authority. Production of uranium dioxide in a rotary kiln. 3,845,193, Cl. 423-261.000.

Livingston, David P. Powered mobile spray irrigation for productive crop sewage utilization. 3,844,481, Cl. 239-177.000.

Livingston, James D., to General Electric Company. Directional composites by solid-state up-transformation. 3,844,845, Cl. 148-2.000.

Locher, Benjamin Carter. Amphibious bicycle. 3,844,246, Cl. 115-2.000.

Lockheed Aircraft Corporation: *See—*

Jenkins, Dave H., 3,844,509.
Lockwood, Hanford N., Jr. Friction impulse gas turbine. 3,844,113, Cl. 60-39.150.
Lodic, Carl L., to Global Erectors, Inc. Contour adapted passenger loading ramp. 3,843,987, Cl. 14-71.000.
Loepfe, Erich, to Aktiengesellschaft Gebruder Loepfe. Apparatus for evaluating the winding speed of cross-winders. 3,844,498, Cl. 242-36,000.
Lofquist, Robert Alden: *See—*
Saunders, Peter Reginald; Dementi, Brian Armstead; and Lofquist, Robert Alden, 3,844,713.
Lohr, Thomas E., to Allied Chemical Corporation. Pressure sensing switch with movable contact diaphragm. 3,845,260, Cl. 200-83.00n.
Lonati, Francesco. Device for increasing the average angular velocity of the cylinders of circular hosiery. 3,844,140, Cl. 66-56.000.
Long Lok Fasteners Corporation: *See—*
Bagheri, Mansour A. H.; and Stillman, Donald W., 3,843,984.
Long, Olan L., to Westinghouse Electric Corporation. Leveling support structure for dishwasher. 3,844,518, Cl. 248-188.400.
Long, Ronald W.; Starr, Robert P.; and Hubert, James C., to Ralston Purina Company. Dry cutting compound for protein glues and method of use. 3,844,805, Cl. 106-79.000.
Loomer, Weston R.; and Thornton, Thomas Fred, to Hartman Metal Fabricators Inc. Pallet accumulator. 3,844,423, Cl. 214-6.0ba.
Loos, George J.: *See—*
Hague, Robert Z.; Hantman, Edwin F.; Laucks, Howard H.; Loos, George J.; Marsciano, Matthew F.; and Mastropole, Alfred J., 3,844,028.
Lopour, Warren A.: *See—*
Henrickson, Kenneth E.; Keidl, Steven D.; and Lopour, Warren A., 3,845,378.
Loucas, Spiro P.: *See—*
Haddad, Heskel M.; and Loucas, Spiro P., 3,845,201.
Louverdrape, Incorporated: *See—*
Hyman, David L., 3,844,330.
Louzos, Demetrois V., to Union Carbide Corporation. Alkaline cells with anodes made from zinc fibers and needles. 3,844,838, Cl. 136-30.000.
Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Feit, Peter Werner; and Nielsen, Ole Bent Tvaermose, 3,845,045.
Lowenstein, M., & Sons, Inc.: *See—*
Leonard, William A.; Kunak, Anthony F.; and Burns, Cecil M., 3,844,813.
Lowery, Robert D., to Marquette Metal Products Company, The. Single spring, bidirectional, anti-overtravel clutch. 3,844,390, Cl. 192-26.000.
Luborsky, Fred E.: *See—*
McCary, Richard O.; and Luborsky, Fred E., 3,844,909.
Lubrizol Corporation, The: *See—*
Miles-Luscombe, William L. R.; Jones, Robert D.; and Walker, Brian F., 3,844,427.
Lucanera, Constantino: *See—*
Parker, Ernest G.; Lucanera, Constantino; and Craine, Richard W., 3,845,485.
Luczak, Joseph J.: *See—*
Fisher, Howard M.; Albers, Bernd G.; and Luczak, Joseph J., 3,844,524.
Lummus Company, The: *See—*
Knol, Henricus Joannes, 3,844,515.
Lund, Walter L. Tire changer for spoked wheels. 3,844,328, Cl. 157-1.240.
Lundfeldt, Karl Lennart: *See—*
Bernhardson, Rune Bernard; Lundfeldt, Karl Lennart; and Ullerfors, Karl-Erik, 3,844,513.
Luscher, Jakob, to Battelle Memorial Institute. Arrangements for biasing the substrate of an integrated circuit. 3,845,331, Cl. 307-304.000.
Lussi, Heinz: *See—*
El-Ghatta, Hussain; Lussi, Heinz; Berther, Clau; and Hoppe, Manfred, 3,844,971.
Luursema, Meerten; and Bolhuis, Pieter Jan, to U.S. Philips Corporation. Arrangement for the controllable supply of an electric lamp. 3,845,350, Cl. 315-291.000.
Lynas, Robert M.: *See—*
Cornyn, William S., Jr.; Dier, Stephen A.; and Lynas, Robert M., 3,845,288.
Lynn, William E. Position indicating device for vehicles. 3,844,050, Cl. 33-264.000.
M&T Chemicals Inc.: *See—*
Freiman, Aaron, 3,845,005.
Ventura, John J.; and Ravenscroft, Philip H., 3,844,976.
Maarhuis, Rudolf Gerard Jan: *See—*
Fraanje, Marinus Joost; Maarhuis, Rudolf Gerard Jan; and Noorman, Frans, 3,844,052.
Mac Press, Inc.: *See—*
Condon, Edmund J., 3,844,381.
MacFarlan Smith Limited: *See—*
Reid, Kenneth Cathro, 3,845,129.
MacIvergan, Robert G.: *See—*
Stringer, Myron Scott; Smith, Daniel W.; MacIvergan, Robert G.; and Elderbaum, Robert W., 3,844,092.
Mackay, Joseph H., Jr.: *See—*
Haigh, Jack M.; and Mackay, Joseph H., Jr., 3,844,072.
Macriss, Robert A.; Rush, William F.; and Weil, Sanford A., to Gas Developments Corporation, mesne. Desiccant system for an open cycle air-conditioning system. 3,844,737, Cl. 55-34.000.
Madland, Thorvald: *See—*
Ross, Irving D., Jr.; and Madland, Thorvald, 3,844,424.
Maeda, Itsuji; and Tamaki, Yahiko, to Hitachi Electronics Co., Ltd. and Nisahin Steel Co., Ltd. Light receiver. 3,845,297, Cl. 250-216.000.
Magder, Jules, to Princeton Chemical Research Inc. Process for the production of polyfunctional aromatic aldehydes. 3,845,137, Cl. 260-599.000.
Magee, Philip S., to Chevron Research Company. N-Hydrocarboyl phosphoroamidothioates and phosphoroamidodithioates. 3,845,172, Cl. 260-956.000.
Maguire, Mary Helen; Thorp, Roland Herbert; and Nobbs, Denis Michael, to University of Sydney, The. 2-Loweralkylthioadenosines. 3,845,205, Cl. 424-180.000.
Maier, Clarence C.: *See—*
Angle, Milton A.; Bender, George L.; Blair, Gerald E.; and Maier, Clarence C., 3,844,755.
Maier, Ludwig, to Monsanto Company. α,ω-Bis-(O,O'-diorganophosphonylmethyl-O-organophosphonyl) alkanes. 3,845,169, Cl. 260-932.000.
Majewski, Robert Francis: *See—*
Gallo, Duane Gordon; and Majewski, Robert Francis, 3,845,214.
Makearn Holdings Limited: *See—*
Fitton-Kearns, Rosslyn, 3,844,667.
Malec, Jerry P. Airless spray gun. 3,844,487, Cl. 239-526.000.
Malen, Charles; Desnos, Monique; and Poignant, Jean-Claude, to Societe en nom Collectif "Science Union et Cie, Societe Francaise de Recherche Medicale". Dibenzo b,f thiazepin 1,4-11-yl amino alkanoic acids. 3,845,074, Cl. 260-327.00b.
Malloney, William R.: *See—*
Granzow, Daniel B.; Malloney, William R.; and Miles, William B., 3,845,239.
Mallory, P. R. & Co., Inc.: *See—*
Shoot, Lyle E., 3,845,364.
Malone, Raymond F.; and Raring, Linus M., to Crucible Inc. Method for producing grooved alloy structures. 3,844,778, Cl. 75-208.00r.
Manca, Michael E.; and Drinnon, Robert H., to Boeing Company, The. Noise shield for jet engine exhaust. 3,844,375, Cl. 181-33.0hc.
Manca, Michael E.; and Drinnon, Robert H., to Boeing Company, The. Clamshell noise shield for engine exhaust. 3,844,376, Cl. 181-33.0hc.
Manhard, Hans: *See—*
Kruis, August; Manhard, Hans; and Schliebener, Claus, 3,844,736.
Mantey, John P., to International Business Machines Corporation. Credibility testing in sampled-data systems. 3,845,370, Cl. 318-327.000.
Manwarren, Thomas E.; and Scott, Kenneth J., to General Electric Company. Stripline slotted balun dipole antenna. 3,845,490, Cl. 343-821.000.
Maoggi, Pietro Entonio: *See—*
Romano, Ugo; Maoggi, Pietro Entonio; and Mauri, Marcello Massi, 3,845,072.
Maplecrest Sausage Co., Inc.: *See—*
Zamiara, Anthony W., 3,844,135.
Marathon Manufacturing Company: *See—*
Koop, Francis D., Jr.; Woods, John F.; Farmer, Kenneth J.; and Harbin, Wayne D., 3,844,127.
Marathon Oil Company: *See—*
Duke, Roy B.; and Seppi, Ned F., 3,845,119.
Knight, Bruce L.; and Rhudy, John S., 3,844,350.
Marchello, Maurice J., to United States Gypsum Company. Studs for demountable partition assembly. 3,844,085, Cl. 52-732.000.
Marchi, Joseph. Clarinet. 3,844,193, Cl. 84-382.000.
Marcot, Guy G., to Bell & Howell Co. Acicular gamma iron oxide process. 3,845,198, Cl. 423-634.000.
Marcus, Erich: *See—*
Robson, John Howard; and Marcus, Erich, 3,845,056.
Marden, Adrian: *See—*
Brock, James McFarlane; Gillan, Anthony David; Marden, Adrian; and Pancewicz, Arthur Christopher, 3,844,080.
Maricle, Donald Leonard; and Giglia, Robert Domenico, to American Cyanamid Company. Electrochromic mirror. 3,844,636, Cl. 350-160.000.
Marietta, Charles W.: *See—*
Marietta, Michael T.; and Marietta, Charles W., 3,843,970.
Marietta, Michael T.; and Marietta, Charles W. Protective headgear. 3,843,970, Cl. 2-3.00r.
Marker, Robert L. Probe chance device having electrical signalling readout. 3,844,567, Cl. 273-134.00a.
Markiewicz, Jan; and Yoli, Alfred H., to Transfer Systems Incorporated. Automatic stud tensioner. 3,844,533, Cl. 254-29.00a.
Marquette Metal Products Company, The: *See—*
Lowery, Robert D., 3,844,390.
Marsberg, Stanley G., to Servomat Fast Foods (Proprietary) Limited. Vending machines. 3,844,447, Cl. 222-129.400.
Marsciano, Matthew F.: *See—*
Hague, Robert Z.; Hantman, Edwin F.; Laucks, Howard H.; Loos, George J.; Marsciano, Matthew F.; and Mastropole, Alfred J., 3,844,028.

Marsh, Frank Dennis, to Du Pont de Nemours, E. I., and Company. N-Acyl-N-hydrocarbylureas and their preparation by oxidative hydrolysis of N-cyanocarbimines. 3,845,086, Cl. 260-404.500.

Marshal and Williams Company: *See—*
Toy, Paul Charles, Jr., 3,844,502.

Martens, Hans, to Siemens Aktiengesellschaft. Super conducting cavity resonator. 3,845,424, Cl. 333-83.00r.

Martens, Stanton Curry: *See—*
Betts, Joseph Ellwood; and Martens, Stanton Curry, 3,845,166.

Martin Marietta Aluminum, Inc.: *See—*
Anderson, Paul E., 3,844,336.

Martin, Otis M.; Kough, John K.; and Miller, Silas M., to Ditz-Crane. Building exterior panelling with end-to-end overlap. 3,844,082, Cl. 52-540.000.

Martin, Richard Ace, to Trinity Industries, Inc. Railway hopper car end structure assembly. 3,844,229, Cl. 105-248.000.

Martinelli, Ramon Ubaldo; and Goldstein, Bernard, to RCA Corporation. Infrared photocathode. 3,845,496, Cl. 357-30.000.

Martinez, Eugene, 1/2 to Reibel, Robert H. Projection screen. 3,844,644, Cl. 350-117.000.

Martzloff, Francois D.: *See—*
Anderson, Thomas E.; and Martzloff, Francois D., 3,845,358.

Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, to Sumitomo Chemical Company, Limited. N-Substituted sulfinyl alkylene piperazines. 3,845,057, Cl. 260-268.0ph.

Maruyama, Masayuki: *See—*
Chiba, Ko; Maruyama, Masayuki; and Kobayashi, Daisaku, 3,844,693.

Marxen, John C.: *See—*
Bosburg, Guy M.; and Marxen, John C., 3,844,212.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Vulcanizable elastomeric sheet containing cord reinforcement. 3,844,327, Cl. 152-354.000.

Masai, Tadahisa, to Hitachi, Ltd. Method of fuel atomization and a fuel atomizer nozzle therefor. 3,844,484, Cl. 239-404.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Laussermair, Friedrich, 3,844,730.

Masi, Frank: *See—*
Byler, William H.; Raffman, Halsey L.; and Masi, Frank, 3,845,314.

Masi, James V., to Bunker Ramo Corporation. Integrated liquid crystal luminophor display. 3,844,637, Cl. 350-160.01c.

Massaloux, Jean-Claude, to Jeumont-Schneider. Sequential data transmission system with insertion of slow-sequence operations. 3,845,475, Cl. 340-172.500.

Massie, Philip E. Electrically operated hydraulic valve particularly adapted for pollution-free electronically controlled internal combustion engine. 3,844,528, Cl. 251-30.000.

Massie, Stephen N.; and Pinke, Paul A., to Universal Oil Products Company. Constrained amine catalysts in the production of urethanes. 3,845,098, Cl. 260-471.00c.

Mastropole, Alfred J.: *See—*
Hague, Robert Z.; Hantman, Edwin F.; Laucks, Howard H.; Loos, George J.; Marsciano, Matthew F.; and Mastropole, Alfred J., 3,844,028.

Mastursi, Michele: *See—*
Lembo, Sabino; Viterbo, Rene; Perri, Giulio Cesare; and Mastursi, Michele, 3,845,058.

Masuda, Noboru; Nishino, Yu; and Takiguchi, Hisashi, to Denki Onkyo Co., Ltd. Galvano-magnetro effect device. 3,845,444, Cl. 338-32.00r.

Masuda, Tatsunosuke. Photo-composing machine. 3,844,656, Cl. 355-53.000.

Matsumiya, Soichi, to Sumitomo Metal Industries Limited. Axle spring snubbing device for railway cars. 3,844,227, Cl. 105-224.00r.

Matsumoto, Seiji; and Takahashi, Isoji, to Fuji Photo Film Co., Ltd. Electrophotographic process including a color masking operation. 3,844,783, Cl. 96-1.200.

Matsuo, Hiroto; and Nakamura, Tadamitsu, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Process for coloring aluminum and aluminum alloys. 3,844,908, Cl. 204-35.00n.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kanai, Kenji, 3,845,503.
Kawashima, Kazumi, 3,845,473.

Matsuzawa, Hideto: *See—*
Iwasaka, Tatsuo; Yuminaka, Takeo; and Matsuzawa, Hideto, 3,844,383.

Matthews, Joseph S., to Gulf Research & Development Company. Method of immobilizing enzymes. 3,844,892, Cl. 195-68.000.

Matto, Lawrence R., to Avco Corporation. Duct wall and reverse flow combustor incorporating same. 3,844,116, Cl. 60-39.320.

Mattson, Clyde E., to Kearny & Trecker Corporation. Apparatus and method for unambiguous counter reading. 3,845,282, Cl. 235-92.0ea.

Matyskella, John X.; and Spencer, Donald J., to Westinghouse Electric Corporation. Adjustable roller arrangement. 3,844,578, Cl. 280-43.220.

Matzek, Norman E.: *See—*
Self, James M.; and Matzek, Norman E., 3,844,854.

Matzek, Norman E., to Dow Chemical Company, The. Non-solvated aluminum hydride coated with stabilizer. 3,844,853, Cl. 149-5.000.

Mauri, Marcello Massi: *See—*
Romano, Ugo; Maoggi, Pietro Entonio; and Mauri, Marcello Massi, 3,845,072.

M.A.V. (Methodes Audio-Visuelles): *See—*
Mensier, Alain, 3,844,571.

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See—*
Liebl, Helmut, 3,845,305.

Maxwell, Bryce. Injection molding machine with a rotary plunger and rod mixing and working chamber. 3,844,699, Cl. 425-207.000.

May & Baker Limited: *See—*
Caton, Michael Peter Lear; Parker, Trevor; and Watkins, Gordon Leonard, 3,845,096.

May, Peter John: *See—*
Phillipps, Gordon Hanley; and May, Peter John, 3,845,085.

May, Richard L. Apparatus for developing fingerprints. 3,844,250, Cl. 118-31.500.

Mayer, Oscar, & Co., Inc.: *See—*
Vedvik, Andrew H.; and Merdler, Myron J., 3,844,091.

Mayerhoffer, Kenneth E.: *See—*
George, David A.; Mayerhoffer, Kenneth E.; and Rodzen, Richard A., 3,843,969.

Mazurek, Jury Vatslavovich: *See—*
Drabkina, Lidia Emelianovna; Mazurek, Jury Vatslavovich; Myasoedov, Dmitry Nikolaevich; Prokhorov, Viktor Pavlovich; Kachalov, Vladimir Alexandrovich; and Ziv, David Moiseevich, 3,844,833.

Mazzei, Alessandro: *See—*
Cucinella, Salvatore; and Mazzei, Alessandro, 3,845,027.

McCabe-Powers Body Company: *See—*
Balogh, Roy, 3,844,378.

McCafferty, Leo A., Jr.: *See—*
Moores, Robert G., Jr.; McCafferty, Leo A., Jr.; and Alsruhe, Leonard U., 3,845,336.

McCall, Robert Eugene: *See—*
Donoghue, John Francis; Forney, Dan Edward; Heiks, Robert Lee; Lasson, Gerald A.; McCall, Robert Eugene; and Rich, Charles Ray, 3,844,870.

McCarthy, Charles D.: *See—*
Foley, Charles F.; and McCarthy, Charles D., 3,844,562.

McCary, Richard O.; and Lubórsky, Fred E., to General Electric Company. Magnetic film plated wire and substrates therefor. 3,844,909, Cl. 204-40.000.

McCloskey, Albert R., to Rockwell International Corporation. Anti-friction ball bearing assembly. 3,844,628, Cl. 308-6.00c.

McCormick, John Paradis. Monitor unit. 3,844,305, Cl. 137-78.000.

McCracken, Lyde S., to Economy Forms Corporation. Vertical shaft form with cammed stripping units. 3,844,526, Cl. 249-152.000.

McCreath, Michael King, to Imperial Chemical Industries Limited. Method of improving shaped fibre forming polymers. 3,844,714, Cl. 8-168.000.

McCulloch Corporation: *See—*
Frederickson, Robert Eugene, 3,844,334.

McCurdy, H. William: *See—*
Weems, Sterling J.; McCurdy, H. William; and Johnson, John W., 3,844,885.

McDonald, Charles H.: *See—*
Winters, Robert E.; and McDonald, Charles H., 3,844,668.

McDonnell Douglas Corporation: *See—*
Schurzler, Jerome C., 3,844,167.

McDonough, David R.; and McDonough, Henry W., to McDonough Manufacturing Company. Packaging and blank handling systems. 3,844,088, Cl. 53-3.000.

McDonough, Henry W.: *See—*
McDonough, David R.; and McDonough, Henry W., 3,844,088.

McDonough Manufacturing Company: *See—*
McDonough, David R.; and McDonough, Henry W., 3,844,088.

McDougall, Douglas S.: *See—*
Elrod, Charles G.; Patrick, William L.; Elrod, Daniel R.; and McDougall, Douglas S., 3,844,597.

McDougall, John Edgar. Probe and method for detecting estrus in animals. 3,844,276, Cl. 128-2.10e.

McGlashan, Kenneth W., to Pemcor, Inc. Method of making and adjusting deflection yoke. 3,844,006, Cl. 29-25.130.

McGraw-Edison Company: *See—*
Jackson, Ralph Eugene, 3,844,063.
Miller, John J., 3,844,142.

McGuire, George. Pelvic support for surgical operations. 3,844,550, Cl. 269-328.000.

McIlroy, Robert A.: *See—*
Flais, Louis R.; and McIlroy, Robert A., 3,844,879.

McKelevey, Joseph E.: *See—*
Bode, Charles H., Jr.; Britcher, Harry H., Jr.; and McKelevey, Joseph E., 3,844,429.

McKenna, James Michael, to Du Pont de Nemours, E. I., and Company. Selective isomerization of polyenes having terminal conjugated unsaturation. 3,845,152, Cl. 260-677.00r.

McKenzie, Donald E.: *See—*
Yosim, Samuel J.; McKenzie, Donald E.; Grantham, Leroy E.; and Birk, James R., 3,845,190.

McKenzie, Robert W., to Collins Radio Company. Shielding apparatus for a signal splitter and signal splitter including the same. 3,845,414, Cl. 333-6.000.

McLain, Charles D., to Olin Corporation. Protective shields for rotary internal combustion engine rotor tip seals. 3,844,692, Cl. 418-113.000.

McLaughlin, Leonard J.; German, William H.; and Hartley, Robert A. Liquid bulk carrying ship. 3,844,239, Cl. 114-74.00r.

McLaughlin, Ward & Co.: *See—*
Stiebel, Ariel I., 3,845,375.

McMenim, Michael Edward, to Imperial Chemical Industries Limited. Manufacture of tetramisole. 3,845,070, Cl. 260-306.700.

McQuarrie, Alexander M.; and Ham, Donald M., to General Electric Company. Spring loaded reset mechanism for a demand meter. 3,844,474, Cl. 235-144.0ma.

McSwain, Horace C. Valve control apparatus. 3,844,311, Cl. 137-624.110.

McSweeney, J. Jay: *See—*
Clarady, Leroy E.; McSweeney, J. Jay; and Smith, Joe H., 3,845,374.

Mead Johnson & Company: *See—*
Gallo, Duane Gordon; and Majewski, Robert Francis, 3,845,214.

Mearl Corporation, The: *See—*
Pinsky, Jules, 3,845,180.

Mechanical Enterprises Incorporated: *See—*
Twyford, Robert H., 3,845,264.

Mecklenburg, Clifford G., to Allis-Chalmers Corporation. Mast mounted overhead guard. 3,844,382, Cl. 187-9.000.

Medrex Corporation: *See—*
Beggs, Donald, 3,844,764.

Medtronic, Inc.: *See—*
Bolduc, Lee Robin, 3,844,292.

Mees, Robert D.; Wilcox, Albert F.; and Schall, Herman H., to General Electric Company. Apparatus for forming coils using round conductor wire. 3,844,150, Cl. 72-206.000.

Mehnert, Walter, to Messerschmitt-Bolkow-Blohm GmbH. Magnetic suspension and switching for vehicles. 3,844,220, Cl. 104-148.0ms.

Mehnert, Walter E.: *See—*
Erben, Klaus-Dieter; Kroy, Walter; and Mehnert, Walter E., 3,845,411.

Meier, Herbert E.: *See—*
Braun, Roland J.; Kuntzleman, Harry C.; and Meier, Herbert E., 3,845,445.

Meinow, Helmut, to Volkswagenwerk Aktiengesellschaft. Door lock arrangement for automobiles. 3,844,595, Cl. 292-216.000.

Meisel, Frederick W., Jr.; and Larson, Kenneth C., to Scott Paper Company. Sequential addition of a cationic debonder, resin and deposition aid to a cellulosic fibrous slurry. 3,844,880, Cl. 162-169.000.

Melli, Vincent. Hydraulic drive system. 3,844,368, Cl. 180-66.00r.

Mendelsohn, Morris A.; and Smith, James D. B., to Westinghouse Electric Corporation. Tape insulated conductor. 3,845,438, Cl. 336-209.000.

Mensier, Alain, to M.A.V. (Methodes Audio-Visuelles). Sound pick-up device for playing back records of small diameters on electric gramophones or and other reproducing apparatus provided with automatic stop. 3,844,571, Cl. 274-39.00r.

Mercer, Floyd W. Mobile muffler shop. 3,844,158, Cl. 72-455.000.

Mercier, Andre, to Fives Lille Cail. Centrifugal drier. 3,844,949, Cl. 210-378.000.

Merck & Co., Inc.: *See—*
Prugh, John D., 3,845,211.
Shen, Tsung-Ying; and Clark, Robert L., 3,845,065.

Mercuri, Louis. Apparatus and method for effecting separations. 3,844,944, Cl. 210-73.000.

Merdler, Myron J.: *See—*
Vedvik, Andrew H.; and Merdler, Myron J., 3,844,091.

Merkle, Alfred; Schmieder, Fritz; and Heinzmann, Werner, to Papst-Motoren KG. Permanent magnet rotor electric motor. 3,845,339, Cl. 310-156.000.

Mero, Peter G. S.; and Volling, George W., to Extel Corporation. Text display control for data printer. 3,844,395, Cl. 197-1.00r.

Merrill, Bennett W., to American Standard Inc. Trolley for movable wall panels. 3,843,995, Cl. 16-97.000.

Mesa, Julio Lopez. Preparation of curable polyester-monomer/water emulsions with a basic borate as emulsifier. 3,845,067, Cl. 260-29.6nr.

Messerschmit-Bolkow-Blohm GmbH: *See—*
Erben, Klaus-Dieter; Kroy, Walter; and Mehnert, Walter E., 3,845,411.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
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Metalectric, Inc.: *See—*
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Metzler, James Monroe; and Foreman, James Blockinger, to Fincor, Inc. Integrated drive system. 3,845,366, Cl. 318-99.000.

Meyer, Martin H.: *See—*
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Michaeli, Isaac; and Reich, Shymon, to Yeda Research and Development Co., Ltd. Novel electrically conductive compositions. 3,845,026, Cl. 260-85.50r.

Michaels, Fred G.: *See—*
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Michaels, Leonard H., to Molex Incorporated. Clinchable terminals. 3,845,456, Cl. 339-97.00r.

Michel, Karl-Heinz: *See—*
Williams, Robert H.; Hoehn, Marvin M.; and Michel, Karl-Heinz, 3,845,203.

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Michurov, Jury Ivanovich: *See—*
Gurvich, Yakov Abramovich; Grinberg, Alexandr Afroimovich; Styskin, Evgeny Lvovich; Kumok, Simona Tevievna; Sobolev, Valerian Mikhailovich; Sorokin, Eduard Sergeevich; Shelkova, Irina Sergeevna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich;and Rutman, Grigory Iosifovich, 3,845,142.

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Migoux, Robert Jean; and Singery, Jean-Michel, to Societe Industrielle Honeywell Bull. Endless type support band for movable-type printing machine. 3,844,211, Cl. 101-111.000.

Miles, William B.: *See—*
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Miller, Bernard. Process for the preparation of ring-chlorinated alkylbenzenes. 3,844,917, Cl. 204-163.00r.

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Miller, Harry B., to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Cutter for use in automatic yarn transfer system. 3,844,190, Cl. 83-395.000.

Miller, Hugo; and Miller, Floyd E., to Inter Process Corporation. Produce cooler and method of cooling product. 3,844,132, Cl. 62-268.000.

Miller, John J., to McGraw-Edison Company. Laundry system using hydraulic extractor. 3,844,142, Cl. 68-19.100.

Miller, Joseph A., Jr., to Lilly, Eli, and Company. Use of analgesic compositions. 3,845,192, Cl. 42-244.000.

Miller, Leroy J.: *See—*
Bilow, Norman; Landis, Abraham L.; and Miller, Leroy J., 3,845,018.

Miller, Lester Isaac, to Du Pont de Nemours, E. I., and Company. Air-drying coating composition of an acrylic enamel and an isocyanate cross-linking agent. 3,844,993, Cl. 260-22.0tm.

Miller, Lyle Eugene: *See—*
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Miller, Marilyn; Goeller, Leonhard A.; and Stevens, Laurence G., to Universal Oil Products Company. Hydrometallurgical recovery of nickel values. 3,845,189, Cl. 423-150.000.

Miller Pottery Engineering Company: *See—*
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Miller, Silas M.: *See—*
Martin, Otis M.; Kough, John K.; and Miller, Silas M., 3,844,082.

Miller, Vincent P., to Miller Pottery Engineering Company. Tracer type stripe printing system. 3,844,249, Cl. 118-2.000.

Miller, Walter A.; and Byck, Joseph S., to United States of America, Health, Education and Welfare. Intimal lining and pump with vertically drafted webs. 3,843,974, Cl. 3-1.000.

Millet, Claude M.: *See—*
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Millipore Corporation: *See—*
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Mills, Ernest F. Pollution control device. 3,844,747, Cl. 55-233.000.

Mills, Jack F.: *See—*
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Minesota Mining and Manufacturing Company: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
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Gandino, Mario; and Paolo, Beretta, 3,844,794.
Nicholson, Geoffrey C.; and Collins, John E., 3,844,650.

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Minnite, Ralph. Steerable vehicle. 3,844,373, Cl. 180-79.20r.

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Misch, Wolfgang: *See—*
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Mitchell, Andrew, III, to Du Pont de Nemours, E. I., and Company. Brake lining composition comprising particulate tar residue. 3,845,008, Cl. 260-37.00r.

Mitchell, Kenneth M.: *See—*
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Mitchell, Lawrence C., to Ethyl Corporation. Smoke retardant compositions. 3,845,001, Cl. 260-31.80r.

Mito, Yutaka: *See—*
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Mitsubishi Rayon Company Limited: *See—*
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Mitsui Mining & Smelting Co. Ltd.: *See—*
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Mitsui Petrochemical Industries, Ltd.: *See—*
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Mitsumi Electric Co., Ltd.: *See—*
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Miura, Konoe: *See—*
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Miya, Masami; Nemoto, Shigeru; and Otsuka, Masanori, to Nepon Kabushiki Kaisha (Nepon Company Ltd.). Method of and an apparatus for saving water used in toilets. 3,843,976, Cl. 4-1.000.

Miyahara, Kingo, to Kabushiki Kaisha Dowa. Gasified fuel burner for burning a liquid fuel and water in a gaseous mixture. 3,844,705, Cl. 413-168.000.

Miyakawa, Seiichi: *See—*
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Miyama, Hajime: *See—*
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Mizushima, Takeo, to Tokyo Research Service Kabushiki Kaisha. Particle size distributing analyser. 3,844,413, Cl. 209-209.000.

Mizushima, Yoshihiko: *See—*
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Moebs, Heinz: *See—*
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Moen, George A. Grip device. 3,844,291, Cl. 128-354.000.

Mohr, Joseph J. Tennis ball pitching apparatus with anti-jamming ball feed mechanism. 3,844,267, Cl. 124-1.000.

Molex Incorporated: *See—*
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Moneymaker, John R.; and Meyer, Maurice C., to Top-Scor Products, Inc. Frozen confection stabilizer systems. 3,845,223, Cl. 426-164.000.

Moneymaker, John R.; and Meyer, Maurice C., to Top-Scor Products, Inc. Frozen confection containing emulsifier-coated stabilizer. 3,845,224, Cl. 426-164.000.

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Moody, Winship B., to Rice Barton Corporation. Multi-layered fibrous web forming system employing a suction roll positioned adjacent the web side of the forming wire and around which the forming wire is wrapped. 3,844,881, Cl. 162-297.000.

Moog Inc.: *See—*
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Moon, Anthony G.; and Vaughn, Roger L., to Kennecot Copper Corporation. Lime control method for highly alkaline flotation pulps. 3,844,303. Cl. 137-5.000.

Moore, Arthur H.: *See—*
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Moore, Donald E.; Mills, Jack F.; and Schneider, John A., to Dow Chemical Company, The. Bromination with bromine chloride under pressure. 3,845,146, Cl. 260-650.00r.

Moore, John: *See—*
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Moores, Robert G., Jr.; McCafferty, Leo A., Jr.; and Alsruhe, Leonard U., to Black and Decker Manufacturing Company, The. Bearing and housing construction. 3,845,336, Cl. 310-52.000.

Morcos, George A. Arithmetic educational toy. 3,844,053, Cl. 35-31.00r.

Morel, Jean-Pierre Georges Denis: *See—*
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Morison, Jack R.: *See—*
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Moriyama, Kazuyoshi, to Hitachi, Ltd. Vortex blower. 3,844,674, Cl. 415-53.00t.

Morlet, Jean Georges: *See—*
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Morokashi, Hiroshi, to Yamaai Seisakusho Co., Ltd. Braking device for a driven shaft. 3,844,387, Cl. 188-187.000.

Morrell, Albert E. Valve fitting with valve actuating sealing means. 3,844,530, Cl. 251-149.600.

Morris, Harold H. Stabilizer for a shoe. 3,844,054, Cl. 36-91.000.

Morris, John Henry, to Baltimore Aircoil Company, Inc. Centrifugal fan wheel blades and methods for spinning centrifugal fan wheels incorporating said blades. 3,844,682, Cl. 416-179.000.

Morrison, Jimmie H., to Storm Manufacturing Company. Method for painting a plurality of articles. 3,844,818, Cl. 117-38.000.

Morrison, Wilbur J., to Bell & Howell Company. Sheet shuttle feed. 3,844,551, Cl. 271-99.000.

Morse, Charles W.: *See—*
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Mosler Safe Company, The: *See—*
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Motorola, Inc.: *See—*
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Steel, Frances R., 3,845,410.

Mott, James D., to Hydril Company. Subsurface safety valve well tool operable by differential annular pressure. 3,844,346, Cl. 166-212.000.

Mt. Pleasant, Gregory G.: *See—*
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Mueller Company: *See—*
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Mueller, David Charles, to American Can Company. Tamperproof reclosable carton. 3,844,472, Cl. 229-51.0tc.

Mueller, Guenther: *See—*
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Mueller, Hans. Mixing device. 3,844,897, Cl. 195-142.000.

Mueller, Von W.: *See—*
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Mukai, Kunio: *See—*
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Murch, Lee Ellis, to Du Pont de Nemours, E. I., and Company. Blends of polyamides and ionic copolymer. 3,845,163, Cl. 260-857.001.
Murchison, Craig B., to Dow Chemical Company, The. Photolytic purification of aqueous solutions containing nitrophenol compounds. 3,844,914, Cl. 204-158.00r.
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Murray, Alastair Hugh Garnet. Sailing boats with rigid sails. 3,844,238, Cl. 114-39.000.
Murray, Lawrence K., to Phillips Petroleum Company. Wet-pelleting of carbon black. 3,844,809, Cl. 106-307.000.
Murray, Ransom James, to Associated Portland Cement Manufacturers Limited, The. Synthetic aggregates made from impure bauxite. 3,844,808, Cl. 106-288.00b.
Murray-Black Co., Inc., The: *See—*
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Myasoedov, Dmitry Nikolaevich: *See—*
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Nackaerts, Ludo C., to Phillips Petroleum Company. Extrusion of foamed polymer over diverging mandrel extension. 3,845,184, Cl. 264-54.000.
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Nagata, Wataru; and Hayase, Yoshio, to Shionogi & Co., Ltd. Process for preparing 1-substituted vinyl phosphonates or phosphinates. 3,845,175, Cl. 260-968.000.
Nagel, Otto: *See—*
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National Research Development Corporation: *See—*
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Neece, Delbert M. Automatically guided tractor. 3,844,372, Cl. 180-79.100.
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Neitzel, Walter, to Voith, J. M., GmbH. Apparatus for pulping and grading of waste paper. 3,844,488, Cl. 241-43.000.
Nelmark, Jack D.: *See—*
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Nelson, George R., to Dennison Manufacturing Company. Electrostatic liquid developer compositions. 3,844,966, Cl. 252-62.100.
Nelson, Jerome W.; Andolph, James B.; and Miller, Ford S., to Crc-Crose International, Inc. Universal carriage apparatus for operating on pipes and analogous workpieces of various diameters. 3,844,468, Cl. 228-13.000.
Nelson, John Edward; and Stock, Norman Astor, to Dominion Engineering Works Limited. Load equalized transmission. 3,844,184, Cl. 74-665.0ga.
Nelson, Kyler F.; and Reinis, Gedemainas J., to Xerox Corporation. Imaging process. 3,844,780, Cl. 96-1.00m.
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Newberry, Robert Anthony, to Wyeth, John, & Brother Limited. 2-(Halophenyl)-1H-benz[g]indol-3-ylacetic acid derivatives. 3,845,073, Cl. 260-326.13r.
Newman, Morris: *See—*
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Newman, Robert H.; and Pluck, Mervyn M., to General Electric Company. Power supply system for television receiver. 3,845,352, Cl. 315-393.000.
Newson, Esmond John, to Haldor Topsoe A/S. Desulfurization process. 3,844,936, Cl. 208-108.000.
Nichicon Capacitor Ltd.: *See—*
Ihaya, Osamu; Ito, Munehiro; Hayashi, Tetsuo; and Fujimoto, Shoichi, 3,845,442.
Nicholson, Geoffrey C.; and Collins, John E., to Minnesota Mining and Manufacturing Company. Projector. 3,844,650, Cl. 353-122.000.
Niegisch, Walter D.: *See—*
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Nielsen, Erik Hauberg Skriver. Apparatus for lifting and tilting automobiles. 3,844,421, Cl. 214-1.00a.

Nielsen, Ole Bent Tvaermose: *See—*
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Nihon Regulator Co., Ltd.: *See—*
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Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.): *See—*
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Nippon Electric Company, Limited: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kogei Kogyo Co., Ltd.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Seisen Co., Ltd.: *See—*
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Nippon Telegraph and Telephone Public Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nisahin Steel Co., Ltd.: *See—*
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Nishino, Yu: *See—*
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Nissan Motor Company: *See—*
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Nissan Motor Company, Limited: *See—*
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Yamaha, Kazuo; and Okada, Yasumasa, 3,844,064.

Nitz, Rolf-Eberhard: *See—*
Stachel, Adolf; Beyerle, Rudi; Kunze, Wilhelm; Nitz, Rolf-Eberhard; and Scholtholt, Josef, 3,845,052.

Nitzsche, Siegfried; Huber, Peter; and Pirson, Ewald, to Wacker-Chemie GmbH. Process for the production of organosiloxane-oxyalkylene-blockcopolymers. 3,845,090, Cl. 260-448.80r.

Nixon, Ivor Gray. Manufacture of steel and ferrous alloys. 3,844,770, Cl. 75-60.000.

NL Industries, Inc.: *See—*
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Nnadi, John C., to Mobil Oil Corporation. Lubricants containing amino and hydroxy-substituted polyphenylthioethers. 3,844,956, Cl. 252-47.500.

Noakes, John E., to Nuclear-Chicago Corporation. Combustion method for preparing samples for liquid scintillation counting. 3,844,716, Cl. 23-230.0pc.

Nobbs, Denis Michael: *See—*
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Nobes, William Douglas, to Caldwell Manufacturing Company. Tiltably-removable automatically-locking window sash. 3,844,066, Cl. 49-182.000.

Nobilium Products, Inc.: *See—*
Dimmer, Charles L.; and Perry, Eric, 3,844,702.

Noguchi, Masaru: *See—*
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Noiles, Douglas G., to United States Surgical Corporation. Hemostat and attachment for suturing organic tubular structures. 3,844,289, Cl. 128-334.00r.

Noll, Walter: *See—*
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Nomiya, Kosei; and Kawagoe, Hiroto. Flip-flop circuit. 3,845,329, Cl. 307-279.000.

Nomura, Kikuziro: *See—*
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Nonnenmann, Wolfgang; Wurst, Bert; Misch, Wolfgang; and Schonart, Edgar, to Bosch, Robert, G.m.b.H. Gas turbine temperature regulating circuit. 3,844,114, Cl. 60-39.16r.

Noorman, Frans: *See—*
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Nordischer Maschinenbau Rud. Bauder: *See—*
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Nordstrom, Joel E. Instrument for inserting bead chain into urethra and bladder. 3,844,274, Cl. 128-2.00m.

Normann, Richard W., to Bendix Corporation, The. Dielectric sleeve for electrically and mechanically protecting exposed female contacts of an electrical connector. 3,845,459, Cl. 339-191.00r.

Norton Company: *See—*
Kiovsky, Joseph R., 3,845,200.

Nosol, John Leonard. Apparatus for use in laterally X-raying a patient's torso. 3,845,313, Cl. 250-439.000.

Notari, Gennaro V.: *See—*
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Notifier Company: *See—*
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Nouvertne, Werner; Muller, Peter Rolf; Peilstocker, Gunter; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Flame-resistant thermoplastic molding compositions and moldings made therefrom. 3,845,007, Cl. 260-37.0pc.

Nowak, Bernard E.: *See—*
Economy, James; and Nowak, Bernard E., 3,845,099.

Nowak, Chester J. Device for diagnosing and correcting eye fusion. 3,844,641, Cl. 351-33.000.

Nuclear-Chicago Corporation: *See—*
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Nudd, Graham R. Acoustic surface wave device. 3,845,419, Cl. 333-30.00r.

Null, Harold R.: *See—*
Eubanks, Lloyd S.; Eby, Roy T.; Cruse, Carl M.; Epstein, Henry L.; Null, Harold R.; and Rosenberger, Frederick E., 3,845,121.

Nupp, Raymond W., to EDMAC Associates Inc. Sonobuoy receiver system, floating coupler. 3,845,402, Cl. 330-10.000.

Nutt, David Walter: *See—*
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Oberender, Frederick G.: *See—*
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O'Brien, Gerard J. Manual key operated message generator. 3,845,250, Cl. 179-100.40r.

Ochi, Osamu: *See—*
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O'Connell, Ian: *See—*
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O'Connor, James A. Safety closure. 3,844,437, Cl. 215-9.000.

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Oguey, Henri J., to Centre Electronique Horloger S.A. Electromagnetic step-by-step micromotor. 3,845,335, Cl. 310-49.000.

Ogura, Katsuyuki: *See—*
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Ohdan, Kenji: *See—*
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Ohloff, Gunther; and Strickler, Hugo, to Firmenich S.A., mesne. Fragrant polycyclic ketones. 3,845,132, Cl. 260-586.00r.

Ohlschlager, Hans; Riester, Oskar; Gotze, Johannes; and Dorlars, Alfons, to Agfa-Gevaert Aktiengesellschaft. Spectrally sensitized light-sensitive silver halide photographic material. 3,844,798, Cl. 96-127.000.

Ohlsson, Corfitz Bengt Ingvar: *See—*
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Oi, Hidesaburo: *See—*
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Olsen, Robert E., to Packard Instrument Company, Inc. Tray storage and handling system for scintillation spectrometers and the like. 3,844,428, Cl. 214-301.000.
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Olympus Optical Co. Ltd.: *See—*
Nakagawa, Jihei, 3,844,640.
Oman, Gary F.: *See—*
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Oman, Gary F.; Strojny, Lawrence J.; Froehling, Paul H.; and Buchanan, Stuart R., to Johnson, Service Company. Analog signal transmission system for digital data communication system. 3,845,467, Cl. 340-147.00r.
Omnionics, Inc.: *See—*
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Otto, Charles W., to General Electric Company. Method of mounting components of a dynamoelectric machine. 3,844,024, Cl. 29-471.300.
Otto, Dennis L.; and Vito, Armando J., to Timken Company, The. Unitized thrust bearing and interlocking seal assembly therefor. 3,844,631, Cl. 308-187.100.
Oury, Claude. Projection apparatus. 3,844,646, Cl. 353-86.000.
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Overfield, Lester D.; and Nagy, Louis M., to National Cash Register Company of Canada, Limited. Document sorting control mechanism. 3,844,553, Cl. 271-179.000.
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Lanik, John H., 3,844,821.
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Palencher, Jacques, to Societe dite: Lebocey Industries. Weft thread holding and cutting device for looms. 3,844,316, Cl. 139-122.00r.
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Krendel, Leonid; Nikonov, Vladimir Filippovich; Ognevsky, Viktor Alexeevich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Palkin, Valery Evseevich; Pakhomov, Anatoly Vladimirovich; Stepin, Anatoly Loginovich; Trofimov, Oleg Fedorovich; Shpelyakovsky, Konstantin Zakharovich; Ryskind, Alexandr Moiseevich; Shklyarov, Isaak Nakhimovich; Rabin, Moisei Osipovich; Kalner, Veniamin Davydovich; and Fishkis, Mikhail Mironovich, 3,844,852.
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Papst, Hermann Ernst. Process for the transportation of impellent gases, for example natural gas, and apparatus for carrying out the process. 3,844,507, Cl. 244-30.000.
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Parker, Jack. Devices and processes for warning against impending rockfalls in underground excavation. 3,844,248, Cl. 116-114.00r.
Parker, Morris J., to Union Carbide Corporation. Packing rings. 3,844,572, Cl. 277-27.000.
Parker, Phillip J. Particle dispenser for accumulating for subsequent release a controlled quantity of finite magnetic particles. 3,844,451, Cl. 222-193.000.
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Parsons, David; and Packer, Mervyn. Anti-skid control means for air pressure braking systems. 3,844,623, Cl. 303-21.00f.

Pasley, Robert H., Sr., to Royalty Designs of Florida, Inc. Polyvinyl chloride plastic formulation and method of fabricating the same. 3,845,000, Cl. 260-30.60r.

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Patel, Hiralal V.; Olejarczyk, Anthony J.; and Fitzthum, Nathan J., to Weatherhead Company, The. Corrosion-resistant flareless tube fitting-ring. 3,844,148, Cl. 72-70.000.

Patel, Vithal C.: *See—*
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Paus, Robert L., to Arvin Industries, Inc. Cassette locating system. 3,845,502, Cl. 360-86.000.

Payne, John W. Vehicle roof construction. 3,844,605, Cl. 296-137.00r.

Peacock, Henry Safford, to Myers Industries, Inc. Sandwich panel structures for supporting shelves. 3,844,231, Cl. 108-107.000.

Pearson, Charles J.: *See—*
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Perfect Line Manufacturing Corporation: *See—*
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Perkins, Glen E. Method and apparatus for restoring concrete road surfaces. 3,844,670, Cl. 404-104.000.

Perraudin, Claude, to Thomson-CSF. Safety system for target irradiating device. 3,845,310, Cl. 250-385.000.

Perri, Giulio Cesare: *See—*
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Perry, Eric: *See—*
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Perry, John, Jr., to United States of America, Army. Fuel cell electrode. 3,844,839, Cl. 136-86.00d.

Pershin, Valentin Andreevich; Shpadi, Evgeny Ivanovich; Lasutkin, Gennady Vasilievich; Pichugin, Alexei Dmitrievich; and Trubin, Vladimir Nikolaevich. Shock-absorbing article and a method for producing same. 3,844,545, Cl. 267-147.000.

Pescetto, James R.: *See—*
Fishel, Larry R.; and Pescetto, James R., 3,845,469.

Peters, Arnis E., to Gelatt Investments, mesne. Microfilm viewer. 3,844,642, Cl. 352-78.00r.

Peters, Gerald C.: *See—*
Crosby, Guy A.; and Peters, Gerald C., 3,845,225.

Petersen, Helge Hogh, to Smidth, F. L., & Co. Electrode cleaning mechanism for electrostatic dust precipitator. 3,844,742, Cl. 55-112.000.

Peterson, Darwin H. Tape winding device. 3,844,503, Cl. 242-67.10r.

Peterson, Donovan F. Capacitor discharge ignition circuit. 3,844,266, Cl. 123-148.tcp.

Peterson, Leroy: *See—*
Krueger, Harvey R.; Neumann, Charles G.; and Peterson, Leroy, 3,844,134.

Petkewicz, Frank J.; Mueller, Von W.; Jameel, Khaja M.; and Emkalns, Arvids, to GTE Automatic Electric Laboratories Incorporated. Pulse latched matrix switches. 3,845,430, Cl. 335-108.000.

Petrella, Robert G., to Air Products and Chemicals, Inc. Fluoroacrylate coating compositions. 3,844,999, Cl. 260-29.60f.

Petro-Tex Chemical Corporation: *See—*
Croce, Louis J.; and Bajars, Laimonis, 3,845,153.

Petry, Robert K.; Biskup, John; and Murphy, Robert E. J., to Congoleum Industries, Inc. Method and apparatus for producing unsupported foamed resinous surface coverings. 3,845,182, Cl. 264-45.100.

Peyer, Siegfried: *See—*
Schwartz, Hermann, 3,844,101.

Peytavin, Pierre, to Societe Anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut el Vallourec Reunies). Continuous drawing bench. 3,844,152, Cl. 72-290.000.

Peytavin, Pierre, to Societe Civile d'Etudes de Centrifugation. Continuous metal castings. 3,844,333, Cl. 164-82.000.

Pfeiffer, Josef: *See—*
Buchner, Werner; Noll, Walter; Reich, Friedrich; Kortmann, Wilfried; and Pfeiffer, Josef, 3,844,826.

Pfister, Robert D.: *See—*
Sakow, Toshihiko; and Pfister, Robert D., 3,844,583.

Pfizer Inc.: *See—*
Cox, David Alexander; Danilewicz, John Christopher; Ham, Allan Leslie; Kemp, John Edward Glyn; and Snarey, Michael, 3,845,123.

Phelps Dodge Industries, Inc.: *See—*
Bahder, George; and Katz, Carlos, 3,845,235.

Philip-Ford Corporation: *See—*
Kay, Robert E.; and Walwick, Earle R., 3,844,843.

Phillipps, Gordon Hanley; and May, Peter John, to Glaxo Laboratories Limited. δ^6 (9) Steroids of the pregnano series. 3,845,085, Cl. 260-397.450.

Phillips, Dennis G.; and Brady, James N., to International Signal & Control Corporation. Helmet transceiver assembly for a firemen's helmet assembly or the like. 3,845,389, Cl. 325-16.000.

Phillips Petroleum Company: *See—*
Albert, Don E., 3,844,683.
Drehman, Lewis E.; and Farha, Floyd E., Jr., 3,844,935.
Farha, Floyd E., Jr., 3,845,156.
Heckelsberg, Louis F., 3,845,155.
Hitzman, Donald O., 3,844,893.
Hsieh, Henry L., 3,845,025.
Johnson, Marvin M., 3,844,734.
Murray, Lawrence K., 3,844,809.
Nackaerts, Ludo C., 3,845,184.
Ruehlen, Forrest N., 3,844,911.
Stratton, Charles A., 3,844,348.
Uraneck, Carl A.; and Smith, Richard L., 3,845,030.

Physics International Company: *See—*
Aslin, Harlan Keith, 3,845,322.

Pichouron, Jean-Claude: *See—*
Py, Alphonse Benjamin; Lefebvre, Jean Henri; and Pichouron, Jean-Claude, 3,844,331.

Pichugin, Alexei Dmitrievich: *See—*
Pershin, Valentin Andreevich; Shpadi, Evgeny Ivanovich; Lasutkin, Gennady Vasilievich; Pichugin, Alexei Dmitrievich; and Trubin, Vladimir Nikolaevich, 3,844,545.

Picozzi, Charles D., to United States of America, Army. Inspection apparatus. 3,844,162, Cl. 73-37.500.

Pierce, Alan E. Selective oxidation of carbalkoxy-1,3-indanedione salts. 3,845,136, Cl. 260-590.000.

Pietzsch, Siegfried; Wirtz, Rudolf; and Schaeffer, Georg, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Isomerization of isopropyl naphthalene. 3,845,149, Cl. 260-668.00a.

Pike, John F.: *See—*
Lincoln, Frank H., Jr.; Pike, John F.; and Youngdale, Gilbert A., 3,845,115.

Piller, Bernhard, to Ciby-Geigy AG. S-triazine derivatives. 3,845,049, Cl. 260-248.0cs.

Pinat, Gaston. Self-centering dual belt conveyor. 3,844,398, Cl. 198-165.000.

Pine, Donald L.: *See—*
Lange, Ronald Edwin; Couleur, John F.; and Pine, Donald L., 3,845,474.

Pinke, Paul A.: *See—*
Massie, Stephen N.; and Pinke, Paul A., 3,845,098.

Pinsky, Jules, to Mearl Corporation, The. Preparation of pearlescent plastics. 3,845,180, Cl. 264-41.000.

Pioneer Electronic Corporation: *See—*
Ando, Shizuo, 3,845,248.

Piper, James. Flexible mounting system. 3,844,687, Cl. 417-301.000.

Pirson, Ewald: *See—*
Nitzsche, Siegfried; Huber, Peter; and Pirson, Ewald, 3,845,090.

Pitney-Bowes, Inc.: *See—*
Vijayendran, Bheema R., 3,844,994.

Pittman, Allen G.: *See—*
Wasley, William L.; and Pittman, Allen G., 3,844,827.

Pittsburgh-Des Moines Steel Company: *See—*
Bliss, Woodrow E., Jr., 3,844,122.

Place, Donald E., to Therm-O-Disc, Incorporated. Wide temperature range adjustable disc thermostat. 3,845,441, Cl. 337-347.000.

Plastic Molders Supply Co., Inc.: *See—*
Pollard, Edward T., 3,844,810.

Plastotecnica, S.A.: *See—*
de la Fuente Burton, Jorge, 3,844,590.

Plate, Dieter Erich Alexander; and Feehan, John Desmond, to Commonwealth Scientific and Industrial Research Organization. Apparatus and method for the manufacture of twisted and plied yarn. 3,844,098, Cl. 57-34.0at.

Platt International Limited: *See—*
Croasdale, Fred; and English, Michael John, 3,844,100.

Plessey Handel und Investments AG: *See—*
Birchenough, John Peacock, 3,845,486.

Plomer, John J.: *See—*

Flynn, James P.; Lane, Georges A.; and Plomer, John J., 3,844,856.

Plomer, John J.; Filter, Harold E.; and Lane, George A., to Dow Chemical Company, The. Solid composite propellant with autocondensation product of triaminoguanidinium azide as binder. 3,844,855, Cl. 149-19.100.

Pluck, Mervyn M.: *See—*
Newman, Robert H.; and Pluck, Mervyn M., 3,845,352.

Pneumo Dynamics Corporation: *See—*
Taylor, John E.; and Brandstadter, Jack M., 3,844,196.

Poignant, Jean-Claude: *See—*
Malen, Charles; Desnos, Monique; and Poignant, Jean-Claude, 3,845,074.

Pojf, Albert J.: *See—*
Newallis, Peter E.; Pojf, Albert J.; and Epstein, Peter F., 3,844,761.

Polak's Frutal Works N.V.: *See—*
Cohen, Amnon Mordechai, 3,845,133.

Pollard, Edward T., to Plastic Molders Supply Co., Inc. Pigment dispersion. 3,844,810, Cl. 106-308.00n.

Pollard, Kenneth E.; Probst, Richard O.; and Stockton, Frank R., to Ransburg Electro-Coating Corporation. Electrostatic powder spray gun. 3,844,477, Cl. 239-15.000.

Polson, Jerry H., to Contel Corporation. Method and apparatus for animal heat detection and recording. 3,844,273, Cl. 128-2.00r.

Pomagalshi S.A.: *See—*
Brian, Rene, 3,844,223.

Pompetti, John P. Rocket motor driven model racing vehicle. 3,844,557, Cl. 273-86.00r.

Pont-A-Mousson S.A.: *See—*
Bram, Georges Eugene, 3,844,589.

Poot, Albert Lucien: *See—*
Willems, Jozef Frans; Poot, Albert Lucien; Heugebaert, Frans Clement; Vandenberghe, Anton Leon; and Von Konig, Anita, 3,844,797.

Porsche, Dr. Ing. H.c.F., K.G.: *See—*
Herrbrich, Bernd, 3,844,119.

Portyrata, Raymond E., to Titan Tool and Die Company, Inc. Water powered swimming pool light. 3,845,291, Cl. 240-26.000.

Potter, Frank, to Filing Systems Inc. Media storage cabinet. 3,844,416, Cl. 211-162.000.

Potts, James E.: *See—*
Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., 3,844,987.

Pourrias, Bernard M.: *See—*
Fauran, Claude P.; Raynaud, Guy M.; Eberle, Jeannine A.; Pourrias, Bernard M.; La Foret, Meudon; and Le Cloarec, Alberty Y., 3,845,046.

PPG Idustries, Inc.: *See—*
Harrill, Joseph M.; Baugham, Thomas C.; and Pruitt, Eugene, 3,844,497.

PPG Industries, Inc.: *See—*
Hammitt, David L., 3,844,719.

Prette, Mario, to SEMEL S.p.A. Pivotal connection without clearance, especially for measuring instruments. 3,844,663, Cl. 403-157.000.

Price, Herbert K., to Reynolds Metals Company. Composite flexible sheet material. 3,844,878, Cl. 161-190.000.

Price, Larry V.: *See—*
Puster, Louis M.; and Price, Larry V., 3,844,442.

Price, Michael Stuart Thomas: *See—*
Hrovat, Milan Franc; Gough, John Richard Cox; and Price, Michael Stuart Thomas, 3,845,178.

Priegnitz, James W., to Universal Oil Products Company. Adsorptive separation of pinene isomers with adsorbents containing an aromatic hydrocarbon substrate. 3,845,151, Cl. 260-675.500.

Primus Mfg. Inc.: *See—*
Culver, Irven H., 3,844,044.

Prince, Zodell W.: *See—*
Watson, Thomas W., 3,844,185.

Princeton Chemical Research Inc.: *See—*
Magder, Jules, 3,845,137.

Probst, Richard O.: *See—*
Pollard, Kenneth E.; Probst, Richard O.; and Stockton, Frank R., 3,844,477.

Procter & Gamble Company, The: *See—*
Booth, Gary Edwin, 3,844,952.
Connor, Daniel S.; and Thompson, James E., 3,844,982.
Cracco, Francis Jean; Pacini, Pier-Luigi; and O'Connell, Ian, 3,844,959.

Project Laboratories, Limited: *See—*
Fox, John William, 3,844,581.

Prokhorov, Viktor Pavlovich: *See—*
Drabkina, Lidia Emelianovna; Mazurek, Jury Vatslavovich; Myasoedov, Dmitry Nikolaevich; Prokhorov, Viktor Pavlovich; Kachalov, Vladimir Alexandrovich; and Ziv, David Moiseevich, 3,844,833.

Prugh, John D., to Merck & Co., Inc. Method for treating allergic disorders due to histamine. 3,845,211, Cl. 424-267.000.

Pruitt, Eugene: *See—*
Harrill, Joseph M.; Baugham, Thomas C.; and Pruitt, Eugene, 3,844,497.

Pruitt, J. G.: *See—*
Blue, J. E.; and Pruitt, J. G., 3,845,462.

Puar, Mohindar S.: *See—*
Wojtowicz, John A.; Lapkin, Milton; and Puar, Mohindar S., 3,845,145.

Publishers Paper Co.: *See—*
Forsythe, David M.; and Runckel, William J., 3,844,863.

Punctman, Herbert Morrison, to Barr and Stroud Limited. Optical scanning device. 3,845,298, Cl. 250-236.000.

Purtell, Rufus J., to Tri-Matic, Inc. Dirigible irrigation system. 3,844,308, Cl. 137-344.000.

Puschel, Walter; Vetter, Hans; and Odenwalder, Heinrich, to AGFA-Gevaert Aktiengesellschaft. Color photographic diffusion transfer process and photographic material for use in this process. 3,844,785, Cl. 96-29.00d.

Puschel, Walter; Benoy, Gaston Jacob; and Kalz, Dietmar, to Agfa-Gevaert Aktiengesellschaft. Silver halide couplers photographic material containing azo masking. 3,844,795, Cl. 96-100.000.

Puster, Louis M.; and Price, Larry V., to Robertshaw Controls Company. Gage construction and parts therefor or the like. 3,844,442, Cl. 220-82.00a.

Py, Alphonse Benjamin; Lefebvre, Jean Henri; and Pichouron, Jean-Claude, to Regie Nationale des Usines Renault. Method of regulating the pressure in low-pressure casting plants. 3,844,331, Cl. 164-4.000.

Quaedvlieg, Mathieu: *See—*
Walz, Klaus; Hees, Walter; and Quaedvlieg, Mathieu, 3,845,113.

Quaker Oats Company, The: *See—*
Dunlop, Andrew P.; Sherman, Edward; and Wuskell, Joseph P., 3,845,138.

Rabin, Moisei Osipovich: *See—*
Krendel, Leonid; Nikonov, Vladimir Filippovich; Ognevsky, Viktor Alexeevich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Palkin, Valery Evseevich; Pakhomov, Anatoly Vladimirovich; Stepin, Anatoly Loginovich; Trofimov, Oleg Fedorovich; Shpelyakovsky, Konstantin Zakharovich; Ryskind, Alexandr Moiseevich; Shklyarov, Isaak Nakhimovich; Rabin, Moisei Osipovich; Kalner, Veniamin Davydovich; and Fishkis, Mikhail Mironovich, 3,844,852.

Racine Duo-Guard, Inc.: *See—*
Angermann, Manfred E., 3,844,003.

Radtke, Carl: *See—*
Schultz, Hans F.; and Radtke, Carl, 3,844,087.

Radtke, Carl, to Roper Corporation. Method of assembling skylight structures. 3,844,086, Cl. 52-741.000.

Raffinerie tirlemontoise: *See—*
Duchateau, Georges F. M. F.; and Vandewijer, Romain G. E., 3,844,835.

Raffman, Halsey L.: *See—*
Byler, William H.; Raffman, Halsey L.; and Masi, Frank, 3,845,314.

Ragot, Claude. Water-closet construction. 3,843,978, Cl. 4-73.000.

Raia, David C.; and Staples, Brewster H. Syringe loading guide. 3,844,318, Cl. 141-27.000.

Raichle, Karl: *See—*
Hess, Bernhard; Raichle, Karl; Rudolph, Hans; and Fuhr, Karl, 3,845,162.

Rainer, Rudolf, to Gebr. Bohler & Co. AG. Ignition apparatus for a plasma burner. 3,845,344, Cl. 313-231.000.

Rakow, Marvin S.: *See—*
Robinson, Franklin H.; Rakow, Marvin S.; and Kerschner, Paul M., 3,844,957.

Ralph, John R.: *See—*
Caton, Dolphus D.; and Ralph, John R., 3,844,243.

Ralston Purina Company: *See—*
Long, Ronald W.; Starr, Robert P.; and Hubert, James C., 3,844,805.

Ram, Michael J.: *See—*
Boss, A. Evan; Ram, Michael J.; and Reynolds, Thomas K., 3,844,822.

Rambaud, Michel, to Societe Industrielle des Oleagineux. Method of preparing soybean products free of antitrypsin. 3,845,229, Cl. 426-375.000.

Randall, John M.: *See—*
Jackson, Earl V.; Schoppe, Wayne F.; Squassoni, Gino F.; Warter, Peter J.; Herr, Gerald A.; Hoesly, David D.; Randall, John M.; Schroeder, Russell G., II; Webb, Douglas D.; Lange, Clark V.; and Kelsch, Robert J., 3,844,651.

Rannou, Claude: *See—*
Chiron, Bernard; Rannou, Claude; and Bernard, Nicole, 3,845,413.

Ransburg Electro-Coating Corporation: *See—*
Pollard, Kenneth E.; Probst, Richard O.; and Stockton, Frank R., 3,844,477.

Ransome Hoffmann Pollard Limited: *See—*
Haines, Derrick John, 3,844,629.

Raring, Linus M.: *See—*
Malone, Raymond F.; and Raring, Linus M., 3,844,778.

Rasmussen, Gunnar Olaf Vestergaard. Convector for heating buildings. 3,844,340, Cl. 165-55.000.

Rater, Rudolph. Apparatus for sawing rock. 3,844,269, Cl. 125-13.00r.

Rathbun, Richard H.: *See—*
Stoutenberg, Carl Christian; and Rathbun, Richard H., 3,845,384.

Ravault, Frank Ernest George, to Foseco International Limited. Production of porous ceramic materials through the use of foam attacking agent. 3,845,181, Cl. 264-44.000.

Ravenscroft, Philip H.: *See—*
Ventura, John J.; and Ravenscroft, Philip H., 3,844,976.

Ray, Frank M., to Flex-Kleen Corporation. Dust collector bag mounting arrangement. 3,844,750, Cl. 55-379.000.

Ray, Stanley R.: *See—*
Hayward, Robert D.; Chapman, James E.; and Ray, Stanley R., 3,845,454.

Ray-Chaudhuri, Dilip K.; Georgoudis, Paul C.; and Stockmann, Hans H., to National Starch and Chemical Corporation. Electrophotographic coating compositions having bromine containing polymer binders. 3,845,022, Cl. 260-78.50r.

Raynaud, Guy M.: *See—*
Fauran, Claude P.; Raynaud, Guy M.; Eberle, Jeannine A.; Pourrias, Bernard M.; La Foret, Meudon; and Le Cloarec, Alberty Y., 3,845,046.

Raytheon Company: *See—*
Derby, Palmer P., 3,845,266.
Holland, Melvin G.; Schulz, Manfred B.; and Barrett, Harrison H., 3,845,420.
Widugris, William, Jr., 3,845,270.

RCA Corporation: *See—*
Heckman, Leroy Francis, Jr., 3,845,403.
Hollingsworth, Richard James, 3,845,328.
Leidich, Arthur John, 3,845,405.
Martinelli, Ramon Ubaldo; and Goldstein, Bernard, 3,845,496.
Williams, Brown F.; and Kosonocky, Walter Frank, 3,845,295.

Re, Frank M., to Dual Manufacturing and Engineering, Incorporated. Reclining chair with two-part backrest. 3,844,607, Cl. 297-61.000.

Rearwin, Richard H.; and Crandall, Milton A., to Microwave Associates, Inc. Digital modulate/demodulate system. 3,845,412, Cl. 332-9.00r.

Reckitt & Colman Products Limited: *See—*
Godfrey, Keith Ernest, 3,845,215.

Redactron Corporation: *See—*
10/29/74; and Richards, Edward M., 3,844,397.

Reed, Glen H. Apparatus for grinding a cabochon or the like. 3,844,070, Cl. 51-127.000.

Reed Industries, Inc.: *See—*
Schmitt, Donald E., 3,844,144.

Reed International Limited: *See—*
Jardine, Robert W., 3,844,189.

Reed, Samuel F., Jr.: *See—*
Baldwin, Mart G.; and Reed, Samuel F., Jr., 3,845,139.

Reesman, Stanley H., to General Foods Corporation. Method for making flaked cereals. 3,845,232, Cl. 426-457.000.

Reetz, Adele: *See—*
Chadwick, David H.; and Reetz, Theodor, 3,845,019.

Reetz, Theodor: *See—*
Chadwick, David H.; and Reetz, Theodor, 3,845,019.

Reeves, Wilson A.: *See—*
Lanoux, Sigred B.; Ellzey, Samuel E., Jr.; Drake, George L., Jr.; and Reeves, Wilson A., 3,845,107.

Reeves, Wilson A.; Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; and Beninate, John V., to United States of America, Agriculture. Process of treating fibrous materials with the reaction product of methyolphosphine adducts and nitrogenouscompounds. 3,844,824, Cl. 117-136.000.

Regie Nationale des Usines Renault: *See—*
Py, Alphonse Benjamin; Lefebvre, Jean Henri; and Pichouron, Jean-Claude, 3,844,331.

Regina Glass Fibre Limited: *See—*
Stewart, David Samuel, 3,844,751.

Regipa, Robert, to Centre National d'Etudes Spatiales. Process for hot-welding a strip on a film. 3,844,867, Cl. 156-270.000.

Reibel, Robert H.: *See—*
Martinez, Eugene, 3,844,644.

Reich, Friedrich: *See—*
Buchner, Werner; Noll, Walter; Reich, Friedrich; Kortmann, Wilfried; and Pfeiffer, Josef, 3,844,826.

Reich, Shymon: *See—*
Michaeli, Isaac; and Reich, Shymon, 3,845,026.

Reicheneder, Franz: *See—*
Willersinn, Carl-Heinz; and Reicheneder, Franz, 3,844,903.

Reicheneder, Franz; Kropp, Rudolf; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted pyridazones. 3,845,054, Cl. 260-250.00a.

Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Dalibor, Horst, 3,845,023.

Reid, Kenneth Cathro, to MacFarlan Smith Limited. Purification of P-aminophenol. 3,845,129, Cl. 260-575.000.

Reimer, William A., to GTE Automatic Electric Laboratories Incorporated. Cable holding spring clamp. 3,845,457, Cl. 339-103.00r.

Reinhardt, Friedrich; and Roth, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Dyeing polyesters or cellulosic esters with printing paste containing butane diol polyglycol ether and naphthol polyglycol ether. 3,844,710, Cl.8-62.000.

Reinhoudt, Jacobus Pieter; Remmers, Gerrit; and Vandersteen, Jacobus Johannes Cornelius, to U.S. Philips Corporation. Method and device for de-aerating greases. 3,844,738, Cl. 55-36.000.

Reinis, Gedemainas J.: *See—*
Nelson, Kyler F.; and Reinis, Gedemainas J., 3,844,780.

Reinwall, Ernest William, Jr., to Illinois Tool Works, Inc. Wedge anchor device. 3,844,194, Cl. 85-79.000.

Reisch, Donald A.: *See—*
Davidson, Robert H.; and Reisch, Donald A., 3,844,559.

Reister, Oskar; and Gesierich, Wolf, to AGFA-Gevaert Aktiengesellschaft. Heterocyclic dye sensitised electrophotographic material. 3,844,782, Cl. 96-1.700.

Reitbeock, Heribert J. P.; and Brody, Thomas P., to Westinghouse Electric Corporation. Classification of a subject. 3,845,471, Cl. 340-149.00r.

Reitsma, Jogchum, to U.S. Philips Corporation. Decimal-to-binary converter. 3,845,290, Cl. 235-155.000.

Relyea, Kenneth D., to Drustar Unit Dose Systems, Inc. Partially nestable pharmaceutical containers. 3,844,408, Cl. 106-42.000.

Remberg, Axel, to Kraftwerk Union Aktiengesellschaft. Plural shell axial turbine for operation with high pressure, high temperature steam. 3,844,675, Cl. 415-108.000.

Remmers, Gerrit: *See—*
Reinhoudt, Jacobus Pieter; Remmers, Gerrit; and Vandersteen, Jacobus Johannes Cornelius, 3,844,738.

Renault, Norbert Emmanuel, to Tirolap Sarl. Target carriage assembly. 3,844,561, Cl. 273-105.600.

Renault, Philippe; Deschamps, Andre; and Dezael, Claude, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for purifying gases containing sulphur compounds and recovering elemental sulphur. 3,845,197, Cl. 423-575.000.

Renerew, Edgar E., to American Aniline Products, Inc. Polymeric materials colored with yellow methine dyes and pigments. 3,844,715, Cl. 8-179.000.

Renold Limited: *See—*
Foster, Kenneth William Samuel; and Irons, Duncan Kinloch, 3,844,198.

Rentzepis, Peter Michael: *See—*
Indig, George Sanford; and Rentzepis, Peter Michael, 3,845,294.

Reprographic Materials, Inc.: *See—*
Brynko, Carl, 3,844,811.

Research Institute for Medicine and Chemistry Inc.: *See—*
Barton, Derek Harold Richard; and Hesse, Robert Henry, 3,845,040.

Reti, Adrian: *See—*
Rose, Robert E.; and Reti, Adrian, 3,844,895.

Rex, Maurice W., Jr., to Upjohn Company, The. Data recorder. 3,845,278, Cl. 235-61.60e.

Rey-Bellet, Gerald; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Dibenzo (a,d) cycloheptene-10-carbonitriles. 3,845,093, Cl. 260-465.00f.

Reynard, Kennard A.; and Rose, Selwyn H., to Horizons Incorporated; a division of Horizons Research Incorporated. Room temperature curing poly (fluoroalkoxyphosphazene) copolymers and terpolymers. 3,844,983, Cl. 260-2.00p.

Reynolds Metals Company: *See—*
Bew, Rudolph V.; Walters, Anderson J.; Funk, Donald J.; and Frazier, Joseph R., Jr., 3,844,155.
Cudzik, Daniel F., 3,844,443.
Price, Herbert K., 3,844,878.

Reynolds Products, Inc.: *See—*
Krueger, Harvey R.; Neumann, Charles G.; and Peterson, Leroy, 3,844,134.

Reynolds, Thomas K.: *See—*
Boss, A. Evan; Ram, Michael J.; and Reynolds, Thomas K., 3,844,822.

Rheem Manufacturing Company: *See—*
Gerlovich, Albert F., 3,844,401.

Rheinlander, Paul. Method of operating a blast furnace. 3,844,767, Cl. 75-42.000.

Rhoades, Vaughan W., to Cities Service Oil Company. Fireflood pollution prevention. 3,845,196, Cl. 423-573.000.

Rhoda, John J., to Hoerner Waldorf Corporation. Disposable trash receptacle. 3,844,470, Cl. 229-22.000.

Rhodes, James Byron; and Ruddy, Joseph Robert, to Du Pont de Nemours, E. I., and Company. Products. 3,844,195, Cl. 87-1.000.

Rhodes, James F.: *See—*
Sharma, Ram A.; and Rhodes, James F., 3,844,842.

Rhodes, John David, to Microwave Development Laboratories. Stop band filter. 3,845,422, Cl. 333-73.00w.

Rhone-Poulenc S.A.: *See—*
Giraudon, Raymond; and Metivier, Jean, 3,845,126.
Sauli, Michel, 3,845,206.

Rhone-Progil: *See—*
Jay, Pierre, 3,844,968.

Rhudy, John S.: *See—*
Knight, Bruce L.; and Rhudy, John S., 3,844,350.

Rice Barton Corporation: *See—*
Moody, Winship B., 3,844,881.

Rich, Charles Ray: *See—*
Donoghue, John Francis; Forney, Dan Edward; Heiks, Robert Lee; Lasson, Gerald A.; McCall, Robert Eugene; and Rich, Charles Ray, 3,844,870.

Richards, Edward M.: *See—*
10/29/74; and Richards, Edward M., 3,844,397.

Richards Manufacturing Co., Inc.: *See—*
Treace, John R., 3,843,979.

Richards, Russell L.; and Gundersen, Kaare R. Method and apparatus to determine activities of a natural aquatic population of microscopic organisms. 3,845,303, Cl. 250-303.000.

Richardson, Henry A.: *See—*
Sellari, Daniele, Jr.; and Richardson, Henry A., 3,845,249.

Richardson-Merrell Inc.: *See—*

Grisar, J. Martin; and Claxton, George P., 3,845,071.
Schoenfeld, Stanley; and Skolnik, Jacob, 3,844,284.

Richeson, William E., Jr.; and Dreisbach, Robert H., to Minnesota Mining and Manufacturing Company, mesne. Video signal processing system for facsimile transmission. 3,845,242, Cl. 178-6.000.

Richtzenhain, Herman; and Stephen, Rudolf, to Dynamit Nobel Aktiengesellschaft. Stabilization of 1,1,1-trichloroethane. 3,845,147, Cl. 260-652.50a.

Ricoh Company Ltd.: *See—*
Shiota, Shunsuke; and Sohtome, Takao, 3,844,919.

Ridge, Martin Peter: *See—*
Werner, Richard Lawrence; Montgomery, Richard Malvern; and Ridge, Martin Peter, 3,844,520.

Riemenschneider, Wilhelm, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of carbon tetrachloride. 3,845,148, Cl. 260-658.00r.

Riester, Oskar: *See—*
Ohlschlager, Hans; Riester, Oskar; Gotze, Johannes; and Dorlars, Alfons, 3,844,798.

Rieth, Kurt A.; and Hoffmann, Edwin E. R., to Textron Inc. Bracelet component including flexible strip covered with link-like shells. 3,844,136, Cl. 63-4.000.

Rikagaku Kenkyusho: *See—*
Horikoshi, Koki; Ikeda, Yonosuke; and Nakao, Masami, 3,844,890.

Riken Piston Ring Kogyo Kabushiki Kaisha: *See—*
Chiba, Ko; Maruyama, Masayuki; and Kobayashi, Daisaku, 3,844,693.

Riley, John E., to Bailey Meter Company. Differential pressure transducer force motor drive circuit. 3,845,348, Cl. 318-676.000.

Ringland, William L.; Neumann, Manfred E.; Kaeser, Ernst K.; Gilmore, Thomas P.; and Geiersbach, Allois F., to Allis-Chalmers Manufacturing Company. Circuit for starting electric motor from standstill with maximum torque. 3,845,372, Cl. 318-398.000.

Rinio, Johannes. Cable pulley. 3,844,537, Cl. 254-191.000.

Rischer, Roman: *See—*
Hoffmann, Werner; and Rischer, Roman, 3,845,135.

Rishavy, Edward A.: *See—*
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Rissi, Erwin: *See—*
Ebnother, Anton; and Rissi, Erwin, 3,845,061.

Roberson, Willie James, to Allis-Chalmers Corporation. Liquid spray nozzle. 3,844,486, Cl. 239-456.000.

Robert, Dominique. Depressing reagent for mineral flotation and method for its employment. 3,844,412, Cl. 209-166.000.

Robertshaw Controls Company: *See—*
Branson, Charles D., 3,845,275.
Brushwyler, Gordon R.; and Kotalik, Richard J., 3,845,376.
Puster, Louis M.; and Price, Larry V., 3,844,442.

Robertson, James A.: *See—*
Ferraro, Charles F.; Javick, Richard A.; and Robertson, James A., 3,844,991.

Robin, Harral T., to Westinghouse Electric Corporation. Power transformer having shields for shaping the electric field in the major insulation spaces. 3,845,436, Cl. 336-84.000.

Robin, Michael; and Schulte, Sheldon R., to Ashland Oil Inc. Stabilization of ethylene polymers. 3,845,013, Cl. 260-45.95c.

Robinson, Franklin H.; Rakow, Marvin S.; and Kerschner, Paul M., to Cities Service Oil Company. Lubricant and fuel compositions. 3,844,957, Cl. 252-32.500.

Robinson, James L. Cashier's booth. 3,844,232, Cl. 109-7.000.

Robison, Samuel Clifford; and Gerber, Heinz Joseph, to Gerber Scientific Instrument Company. Precise indexing apparatus and method. 3,844,461, Cl. 226-8.000.

Robson, John Howard; and Marcus, Erich, to Union Carbide Corporation. Piperazinalkyl diacrylates. 3,845,056, Cl. 260-268.00r.

Rochat, Alain Claude: *See—*
Somlo, Tibor; Rochat, Alain Claude; and Murphy, James, 3,845,194.

Rochester, William L., Jr. Choker knob for logging cables and method of making same. 3,844,601, Cl. 294-78.00r.

Rockstead, Raymond H.; and Hasbrouck, Richard T., to United States of America, Atomic Energy Commission. Method and apparatus for measuring pressures in fluid lines. 3,844,173, Cl. 73-398.00r.

Rockwell, Bruce C., to Dana Corporation. Compression molding apparatus. 3,844,701, Cl. 425-348.000.

Rockwell International Corporation: *See—*
Friske, Warren H.; and Page, John P., 3,844,846.
McCloskey, Albert R., 3,844,628.
Yosim, Samuel J.; McKenzie, Donald E.; Grantham, Leroy E.; and Birk, James R., 3,845,190.

Rodger, Erwin S. Light guide liquid level indicator. 3,844,171, Cl. 73-293.000.

Rodriguez, Paul L. Mattress or mattress covering of novel shape. 3,843,980, Cl. 5-327.00r.

Rodzen, Richard A.: *See—*
George, David A.; Mayerhoffer, Kenneth E.; and Rodzen, Richard A., 3,843,969.

Roe, Bruce C. Electronic lock. 3,845,362, Cl. 317-134.000.

Roe, Edward H.; and Patton, James D., to Great Lakes Carbon Corporation. Coke oven emission control system. 3,844,901, Cl. 202-263.000.

Roe, Thorndyke, Jr., to United States of America, Navy. Chemical overlay solution with non-toxic plasticizers for sediment control. 3,845,003, Cl. 260-31.80h.

Roehling, Duane J.; and Fradkin, David B., to United States of America, Atomic Energy Commission. Apparatus and method for magnetoplasmadynamic isotope separation. 3,845,300, Cl. 250-282.000.

Roelofs, Wendell; Kochansky, Jan; and Carde, Ring. Trans-7-cis-9-dodecadien-1-yl acetate. 3,845,108, Cl. 260-488.00h.

Rogers, James C.: *See—*
Bleau, Charles D.; Rogers, James C.; and Spears, Jesse W., 3,844,552.

Rogers, John L. Clamp for holding cut-out pattern to a door unit. 3,844,548, Cl. 269-91.000.

Rogers, Joseph P., Jr.; and Thresher, Richard G., to United States of America, Army. Mine fuze. 3,844,215, Cl. 102-8.000.

Rogora, Edoardo: *See—*
Surace, Filippo; Rogora, Edoardo; and Bassi, Aldo, 3,844,265.

Rohm and Haas Company: *See—*
Weir, David W., 3,845,176.

Romano, Ugo; Maoggi, Pietro Entonio; and Mauri, Marcello Massi, to Snam Progetti S.p.A. Process for the oxidative dehydrocyclization of imines. 3,845,072, Cl. 260-319.100.

Romberg, Felix B. Traction gate. 3,844,594, Cl. 292-66.000.

Romere, John M., to AMF Incorporated. End area inspection tool for automated nondestructive inspection. 3,844,164, Cl. 73-67.80s.

Roni, Jack C., to Boeing Company, The. Titanium chemical milling etchant. 3,844,859, Cl. 156-18.000.

Roos, Willem Cornelis. Brayton engines. 3,844,109, Cl. 60-39.600.

Roper Corporation: *See—*
Radtke, Carl, 3,844,086.
Schultz, Hans F.; and Radtke, Carl, 3,844,087.

Rosdorff, Leopold. Notation system. 3,845,279, Cl. 235-61.12n.

Rose, Edgar, to Outboard Marine Corporation. Steering assembly for snowmobile. 3,844,366, Cl. 180-5.00r.

Rose, Edwin James, to Elite Engineering Limited. Wire cropping and forming tools and to a method of utilising the same. 3,844,153, Cl. 72-332.000.

Rose, Robert E.; and Reti, Adrian, to Millipore Corporation. Filtration and incubation apparatus. 3,844,895, Cl. 195-139.000.

Rose, Selwyn H.: *See—*
Reynard, Kennard A.; and Rose, Selwyn H., 3,844,983.

Rosen, Melvin Harris, to Ciba-Geigy Corporation. Polycyclic pentanones. 3,845,037, Cl. 260-239.00b.

Rosenberger, Frederick E.: *See—*
Eubanks, Lloyd S.; Eby, Roy T.; Cruse, Carl M.; Epstein, Henry L.; Null, Harold R.; and Rosenberger, Frederick E., 3,845,121.

Ross, Irving D., Jr.; and Madland, Thorvald, to Youngstown Steel Door Company. Vehicle transporting apparatus. 3,844,424, Cl. 214-38.00r.

Rostone Corporation: *See—*
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Roth, Kurt: *See—*
Reinhardt, Friedrich; and Roth, Kurt, 3,844,710.

Rothert, Horst, to Fischer, Karl, Apparate-und Rohleitungsbau. Spinning apparatus with means for winding up the filaments. 3,844,496, Cl. 242-35.50r.

Rothy, Gerhard: *See—*
Gela, Helmut; Besenmatter, Walter; Scheiber, Robert; Schneider, Fritz; and Rothy, Gerhard, 3,844,658.

Roto-Finish Limited: *See—*
Barlett, William John; and Boniface, Frederick George, 3,844,071.

ROUSSEL UCLAF: *See—*
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Royalty Designs of Florida, Inc.: *See—*
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Rubbermaid Incorporated: *See—*
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Rudolph, Hans: *See—*
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Ruehlen, Forrest N., to Phillips Petroleum Company. Method for producing adiponitrile. 3,844,911, Cl. 204-73.00a.

Ruel, Maurice M. J.; and Sirianni, Aurelio Frederick, to Canadian Patents and Development Limited. Agglomeration and extraction of peat moss. 3,844,759, Cl. 71-24.000.

Runckel, William J.: *See—*
Forsythe, David M.; and Runckel, William J., 3,844,863.

Rush, William F.: *See—*
Macriss, Robert A.; Rush, William F.; and Weil, Sanford A., 3,844,737.

Russell, Donald H.: *See—*
Sauer, Richard W.; and Russell, Donald H., 3,844,862.

Rust, Edgar C., Jr., to Crompton & Knowles Corporation. Apparatus for ultrasonic welding of sheet materials. 3,844,869, Cl. 156-358.000.

Rutman, Grigory Iosifovich: *See—*
Gurvich, Yakov Abramovich; Grinberg, Alexandr Afroimovich; Styskin, Evgeny Lvovich; Kumok, Simona Tevievna; Sobolev, Valerian Mikhailovich; Sorokin, Eduard Sergeevich; Shelkova, Irina Sergeevna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich;and Rutman, Grigory Iosifovich, 3,845,142.

Rutman, Jacques, to Adret-Electronique. Device for multiplying a frequency increment. 3,845,396, Cl. 328-15.000.

Ryan, Ted L. Positive displacement Brayton cycle rotary engine. 3,844,117, Cl. 60-39.610.

Ryczek, William G., to Allis-Chalmers Corporation. Tilting grain bin unloader. 3,844,632, Cl. 308-191.000.

Ryoki, Taizo: *See*—
Nagasawa, Taro; Ryoki, Taizo; Kiyosawa, Isao; Oizumi, Saburo; Fukuwatari, Yasuo; Suzuki, Takashi; Ishibashi, Hitoshi; and Kawamura, Nobuo, 3,845,231.

Ryskind, Alexandr Moiseevich: *See*—
Krendel, Leonid; Nikonov, Vladimir Filippovich; Ognevsky, Viktor Alexeevich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Palkin, Valery Evseevich; Pakhomov, Anatoly Vladimirovich; Stepin, Anatoly Loginovich; Trofimov, Oleg Fedorovich; Shpelyakovsky, Konstantin Zakharovich; Ryskind, Alexandr Moiseevich; Shklyarov, Isaak Nakhimovich; Rabin, Moisei Osipovich; Kalner, Veniamin Davydovich; and Fishkis, Mikhail Mironovich, 3,844,852.

Saco-Lowell Corporation: *See*—
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Saether, Tore V., to Acushnet Company. Elastomeric platform for furniture. 3,845,011, Cl. 260-42.320.

Sagami Chemical Research Center: *See*—
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 3,845,076.

Sagara, Takehiko: *See*—
Harada, Hideki; Yamashita, Keitaro; Sagara, Takehiko; Oyama, Sadahiro; Fujitsuka, Takamichi; Sekino, Tamotsu; and Takanashi, Masanori, 3,845,334.

Sager, Paul H., Jr., to General Atomic Company, mesne. Multistage flash distillation. 3,844,899, Cl. 202-173.000.

Saint-Gobain Industries: *See*—
Sauer, Gerd; Kunert, Heinz; and Moebs, Heinz, 3,845,489.

Sakai, Shigeru: *See*—
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,845,057.

Sakai, Toshiyuki; and Ushimaru, Yutaka, to Mitsui Mining & Smelting Co. Ltd. Catalyst for use in purification of exhaust gases. 3,844,980, Cl. 252-466.00b.

Sakaoka, Fiji: *See*—
Goto, Takeshi; and Sakaoka, Fiji, 3,845,164.

Sakow, Toshihiko; and Pfister, Robert D. Vehicle torsion bar. 3,844,583, Cl. 280-124.00b.

Sakunaga, Kenichi: *See*—
Tabara, Yoshijiro; Akiyama, Hiroshi; Sato, Shoji; Miyata, Seiji; and Sakunaga, Kenichi, 3,844,722.

Saleil, Jean: *See*—
Leroy, Pierre; Cadart, Michel; Morlet, Jean Georges; and Saleil, Jean, 3,844,768.

Salomon, Georges Pierre Joseph. Connecting element for ski boot. 3,844,575, Cl. 280-11.35n.

Samiran, David; and Moore, Arthur H. Connecting device. 3,844,138, Cl. 64-30.00e.

Sanders, Richard R. Tent and enclosure therefor. 3,844,300, Cl. 135-4.00a.

Sandoz Ltd.: *See*—
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Sandoz Ltd.; a/k/a Sandoz AG: *See*—
Schneider, Rupert, 3,845,092.

Sandoz-Wander, Inc.: *See*—
Denzer, Max; and Ott, Hans, 3,845,128.

Sandrock, Paul W. Dangler assembly for electro-chemical installations. 3,844,923, Cl. 204-279.000.

Sands, Robert E.; and Floren, Carl E., to Mueller Company. Pipe coupling. 3,844,585, Cl. 285-3.000.

Sandstrom, Paul H.: *See*—
Throckmorton, Morford C.; and Sandstrom, Paul H., 3,845,029.

Sansui Electric Co., Ltd.: *See*—
Takahashi, Susumu, 3,845,245.

Santilli, Raymond R. Alternator power source. 3,845,321, Cl. 290-40.000.

Sarkes Tarzian, Inc.: *See*—
Valdettaro, Alarico A., 3,844,176.

Sasajima, Kikuo: *See*—
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,845,057.

Sasaki, Yoshiyuki; and Tani, Masayuki, to Teijin Limited. Process for production of composite bulk yarn. 3,844,103, Cl. 57-157.0ts.

Sasamoto, Keigo: *See*—
Shirai, Sakae; and Sasamoto, Keigo, 3,845,353.

Sasse, Klaus: *See*—
Schafer, Werner; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., 3,845,069.

Saterdal, Edgar, to Aktiebolaget Svenska Flaktfabriken. Adjustable-pitch axial fan. 3,844,680, Cl. 416-157.000.

Sato, Ikuro: *See*—
Soma, Shoji; and Sato, Ikuro, 3,845,483.

Sato, Nobuyasu; Nakamura, Toshio; Takenaka, Hiroshi; and Mito, Yutaka. Solid composition comprising indolylaliphatic acid derivatives for forming an injection. 3,845,210, Cl. 424-266.000.

Sato, Shoji: *See*—
Tabara, Yoshijiro; Akiyama, Hiroshi; Sato, Shoji; Miyata, Seiji; and Sakunaga, Kenichi, 3,844,722.

Sato, Tadahide: *See*—
Harumiya, Noriho; Miyama, Hajime; Tanzawa, Hiroshi; Mori, Yuichi; Sato, Tadahide; Idezuki, Yasuo; and Hori, Motokazu, 3,844,989.

Sato, Yuichiro, to Taiheiyo Kinzoku Kabushiki Kaisha. High toughness iron balls and process of making the same. 3,844,844, Cl. 148-2.000.

Sauer, Gerd; Kunert, Heinz; and Moebs, Heinz, to Saint-Gobain Industries. Window antenna. 3,845,489, Cl. 343-713.000.

Sauer, Richard W.; and Russell, Donald H., to Atlantic Richfield Company. Method of coating fabrics with polyurethane. 3,844,862, Cl. 156-78.000.

Sauli, Michel, to Rhone-Poulenc S.A. Insecticidal and fungicidal compositions containing 1-0,0-diethylthiophosphonyl-indazoles. 3,845,206, Cl. 424-200.000.

Saunders, Peter Reginald; Dementi, Brian Armstead; and Lofquist, Robert Alden, to Allied Chemical Corporation. Alkyl and aryl phosphites to inhibit ozone fading of dyed polyamides. 3,844,713, Cl. 8-165.000.

Sause, Henry W., to Searle, G. D., & Co. 2,7-Bis[2-(4-azatricyclo [4.3.1.1 3,8] undec-4-yl) ethoxy]fluoren-9-one and congeners. 3,845,038, Cl. 260-239.00b.

Savoy, Donald Edward, to AMF Incorporated. End area inspection tool for automated nondestructive inspection. 3,844,165, Cl. 73-67.80s.

Sawicki, Joseph J.; and Talbert, Charles D., to Bendix Corporation, The. Signal generator for testing VOR navigation receivers. 3,845,484, Cl. 343-106.00r.

Schaeffer, Georg: *See*—
Pietzsch, Siegfried; Wirtz, Rudolf; and Schaeffer, Georg, 3,845,149.

Schafer, Werner; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. 1-(2-Benzothiazolyl)-1-ethyl-3-methylurea. 3,845,069, Cl. 260-305.000.

Schall, Herman H.: *See*—
Mees, Robert D.; Wilcox, Albert F.; and Schall, Herman H., 3,844,150.

Schaubstahl-Werke: *See*—
Stotzel, Friedhelm; Dobbeler, Erwin; and Vaer, Voldemar, 3,844,347.

Schegolev, Gleb Stepanovich: *See*—
Kolesnikov, Alexandr Pavlovich; Schegolev, Gleb Stepanovich; Granovsky, Semen Abramovich; Stankevich, Ljudmila Ivanovna; and Smolyarov, Ljustien Grigorievich, 3,844,681.

Scheiber, Robert: *See*—
Gela, Helmut; Besenmatter, Walter; Scheiber, Robert; Schneider, Fritz; and Rothy, Gerhard, 3,844,658.

Scheiner, Harry, to International Telephone and Telegraph Corporation. Los loss high-Q filter. 3,845,423, Cl. 333-73.00w.

Scherenberg, Hans O., to Daimler-Benz Aktiengesellschaft. Protection installation for the passengers of vehicles especially motor vehicles. 3,844,580, Cl. 280-150.0ab.

Schering Corporation: *See*—
Steinman, Martin, 3,845,039.

Scherrer, Igor, to Ebauches S.A. Electronic device for maintenance of the oscillations of a balance wheel. 3,844,106, Cl. 58-28.000.

Scherzer, Robert K.: *See*—
Hudson, Harold L.; Mt. Pleasant, Gregory G.; and Scherzer, Robert K., 3,844,230.

Scheunemann, Horst: *See*—
Berger, Klaus; and Scheunemann, Horst, 3,844,521.

Schiemann, Wolfram. Device for discharge nozzles on cans. 3,844,456, Cl. 222-545.000.

Schlicht, Walter, to International Telephone and Telegraph Corporation. Electromechanical transducer for watches. 3,844,104, Cl. 58-23.00d.

Schliebener, Claus: *See*—
Kruis, August; Manhard, Hans; and Schliebener, Claus, 3,844,736.

Schlumberger Technology Corporation: *See*—
Hart, Herbert J., 3,845,381.
Tejada, Roberto Armando, 3,845,492.

Schmersal, Larry J.; Baker, Theodore C.; and Murley, M., to Owens-Illinois, Inc. System for producing a gray scale with a gaseous display and storage panel using multiple discharge elements. 3,845,243, Cl. 178-7.30d.

Schmidt, Robert R.: *See*—
Schafer, Werner; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., 3,845,069.

Schmieder, Fritz: *See*—
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Schmitt, Donald E., to Reed Industries, Inc. Coin vault. 3,844,144, Cl. 70-86.000.

Schneider, Fritz: *See*—
Gela, Helmut; Besenmatter, Walter; Scheiber, Robert; Schneider, Fritz; and Rothy, Gerhard, 3,844,658.

Schneider, Gilbert, to La Telephonie Industrielle et Commerciale "-Telic". Press-button panel arrangement for printed circuit card. 3,845,254, Cl. 200-5.00a.

Schneider, Hans-Dieter; and Bachmann, Horst, to Bosch, Robert, Fernsehanlagen GmbH. Portable television camera with audio communication. 3,845,238, Cl. 178-5.80r.

Schneider, John A.: *See*—
Moore, Donald E.; Mills, Jack F.; and Schneider, John A., 3,845,146.

Schneider, Rupert, to Sandoz Ltd.; a/k/a Sandoz AG. 1,3-Bis-(substituted-disulfan)h2-alkylamino propanes. 3,845,092, Cl. 260-455.00b.

Schnitzler, Alvin D., to United States of America, Army. Photosensitive junction controlled electron emitter. 3,845,296, Cl. 250-213.0vt.

Schock, Eberhard. Basement window shield. 3,844,076, Cl. 52-107.000.

Schoenfeld, Stanley; and Skolnik, Jacob, to Richardson-Merrell Inc. Disposable douche. 3,844,284, Cl. 128-232.000.

Schold, George R.: *See—*
Schold, George R.; and Fischbeck, James D., 3,844,490.

Schold, George R.; and Fischbeck, James D., to Schold, George R. Apparatus for dispersing finely divided solid particles in a liquid vehicle. 3,844,490, Cl. 241-74.000.

Scholtholt, Josef: *See—*
Stachel, Adolf; Beyerle, Rudi; Kunze, Wilhelm; Nitz, Rolf-Eberhard; and Scholtholt, Josef, 3,845,052.

Schonart, Edgar: *See—*
Nonnenmann, Wolfgang; Wurst, Bert; Misch, Wolfgang; and Schonart, Edgar, 3,844,114.

Schoppe, Wayne F.: *See—*
Jackson, Earl V.; Schoppe, Wayne F.; Squassoni, Gino F.; Warter, Peter J.; Herr, Gerald A.; Hoesly, David D.; Randall, John M.; Schroeder, Russell G., II; Webb, Douglas D.; Lange, Clark V.; and Kelsch, Robert J., 3,844,651.

Schroeder, Kenneth Roger; and Miller, Lyle Eugene, to Deere & Company. Tractor grille housing mounting. 3,844,369, Cl. 180-68.00p.

Schroeder, Russell G., II: *See—*
Jackson, Earl V.; Schoppe, Wayne F.; Squassoni, Gino F.; Warter, Peter J.; Herr, Gerald A.; Hoesly, David D.; Randall, John M.; Schroeder, Russell G., II; Webb, Douglas D.; Lange, Clark V.; and Kelsch, Robert J., 3,844,651.

Schubert, David C., to United States of America, Air Force, mesne. Insulating cone plasma enhancement configuration for a plasma waveguide switch. 3,845,427, Cl. 333-98.00s.

Schubert, Hans Werner: *See—*
Henecka, Hans; and Schubert, Hans Werner, 3,845,062.

Schudel, Peter: *See—*
Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Sigg-Grutter, Trudi; and Wild, Jost, 3,845,134.

Schuller, James T., to UMC Industries, Inc. Check-controlled vending. 3,845,470, Cl. 340-149.00a.

Schulte, Fritz, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Coking installation. 3,844,900, Cl. 202-227.000.

Schulte, Sheldon R.: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,845,013.

Schultes, Hermann, to Olin Corporation. Vibration damped ski. 3,844,576, Cl. 280-11.131.

Schultz, Hans F.; and Radtke, Carl, to Roper Corporation. Skylight structure and structural members therefor. 3,844,087, Cl. 52-200.000.

Schultz, Willard F.; and Ottinger, James A., to General Electric Company. Electric oven toaster bread rack and door mechanism. 3,845,272, Cl. 219-386.000.

Schulz, Gerhard: *See—*
Bartholome, Ernst; Koehler, Waldemar; Stoeckelmann, Guenter; Schulz, Gerhard; Nagel, Otto; Goetze, Walter; Kasper, Werner; Dreher, Erich; and Dahlinger, Roland, 3,845,144.

Schulz, Jurgen, to Licentia Patent-Verwaltungs-G.m.b.H. Pulse amplitude evaluation. 3,845,397, Cl. 328-117.000.

Schulz, Manfred B.: *See—*
Holland, Melvin G.; Schulz, Manfred B.; and Barrett, Harrison H., 3,845,420.

Schurzler, Jerome C., to McDonnell Douglas Corporation. Triaxial tensile stress device. 3,844,167, Cl. 73-93.000.

Schuster, Joerg: *See—*
Lebkuecher, Rolf; Koenig, Horst; Amann, August; Giertz, Hubert; and Schuster, Joerg, 3,845,050.

Schwarzkopf Development Corporation: *See—*
Sedlatschek, Karl; Heitzinger, Friedrich; Beyer, Horst; and Buran, Ulrich, 3,844,729.

Schwartz, Hermann, to Peyer, Siegfried. Thread monitor device for textile machinery. 3,844,101, Cl. 57-81.000.

Schwartz, James W., to Zenith Radio Corporation. Television display panel having gas discharge cathode-luminescent elements. 3,845,241, Cl. 178-7.30d.

Schweitzer, Earl O., to Ardac, Inc. Angled edge stacking coin chute. 3,844,298, Cl. 133-5.000.

Schwenke, Rudiger: *See—*
Fuhrmann, Siegfried; Harders, Volkwart; Kruger, Hartmut; and Schwenke, Rudiger, 3,844,587.

Schwerdtel, Wulf: *See—*
Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, 3,845,112.

Schweriner, Harold A., to Simco Company, Inc., The. Contact printing apparatus and method. 3,844,657, Cl. 355-132.000.

Scott & Fetzer Company: *See—*
Edwards, James D., 3,845,256.

Scott, David Richard Howard: *See—*
Scott, Walter Roy; Scott, David Richard Howard; and Scott, Nigil Phillip, 3,844,335.

Scott, Kenneth J.: *See—*
Manwarren, Thomas E.; and Scott, Kenneth J., 3,845,490.

Scott, Milford M., Jr.; and Wheeler, Floyd J., Jr., to STP Corporation. Exhaust gas recirculating valve. 3,844,260, Cl. 123-119.00a.

Scott, Nigil Phillip: *See—*
Scott, Walter Roy; Scott, David Richard Howard; and Scott, Nigil Phillip, 3,844,335.

Scott Paper Company: *See—*
Meisel, Frederick W., Jr.; and Larson, Kenneth C., 3,844,880.

Scott, Sam C. Water reservoir liner for concrete forms. 3,844,527, Cl. 249-189.000.

Scott, Walter Roy; Scott, David Richard Howard; and Scott, Nigil Phillip, to Airvert Limited. Moulding of metallic articles. 3,844,335, Cl. 164-265.000.

Scovill Manufacturing Company: *See—*
Kruger, James Brompton; and Cooper, Joseph, 3,844,634.

Searle, G. D., & Co.: *See—*
Brown, Edward A., 3,845,083.
Chinn, Leland J., 3,845,041.
Sause, Henry W., 3,845,038.
Tweit, Robert C., 3,845,125.

Sears, James H.; and Vucish, Paul M., to Owens-Corning Fiberglas Corporation. Apparatus for severing linear elements. 3,844,191, Cl. 83-420.000.

Sedlatschek, Karl; Heitzinger, Friedrich; Beyer, Horst; and Buran, Ulrich, to Schwarkzkopf Development Corporation. Metals having wear-resistant surfaces and their fabrication. 3,844,729, Cl. 29-195.000.

Seeley, William M.: *See—*
Gianni, Sebastian J.; Seeley, William M.; Stillson, Timothy Jay; Hamilton, Clark B.; and Barker, Perley K., 3,844,131.

Sekino, Tamotsu: *See—*
Harada, Hideki; Yamashita, Keitaro; Sagara, Takehiko; Oyama, Sadahiro; Fujitsuka, Takamichi; Sekino, Tamotsu; and Takanashi, Masanori, 3,845,334.

Self, James M.; and Matzek, Norman E., to Dow Chemical Company, The. Stabilization of light metal hydride. 3,844,854, Cl. 149-6.000.

Selfix, Inc.: *See—*
Olen, George R., 3,844,586.

Selin, Terry G.: *See—*
Berger, Abe; and Selin, Terry G., 3,845,127.

Sellari, Daniele, Jr.; and Richardson, Henry A., to International Telephone and Telegraph Corporation. Multi-frequency receiver. 3,845,249, Cl. 179-84.0vf.

Sellers, H. Charles, Jr.; and Hatchel, Ronnis J., to Beloit-Passavant Corporation. Log conveying apparatus. 3,844,399, Cl. 198-165.000.

SEMEL S.p.A.: *See—*
Prette, Mario, 3,844,663.

Seppi, Ned F.: *See—*
Duke, Roy B.; and Seppi, Ned F., 3,845,119.

Sernatinger, Franz; and Abad, Maurice, to Etat Francais. Apparatus for automatic dynamic positioning and steering systems. 3,844,242, Cl. 114-144.00b.

Servomat Fast Foods (Proprietary) Limited: *See—*
Marsberg, Stanley G., 3,844,447.

Sessody, Donald W., to Applied Power Inc. Lightweight hydraulic jack. 3,844,534, Cl. 254-93.00h.

Sette, James J. Valve actuating safety cap assembly for pressurized dispensers. 3,844,448, Cl. 222-153.000.

Sewing, Heinrich: *See—*
Jakobs, Ferdinand; and Sewing, Heinrich, 3,844,216.

Sexstone, John H., to Brown & Williamson Tobacco Corporation. Continuous manufacture of a multiple filter rod having spaced pockets containing particulate material. 3,844,200, Cl. 93-1.00c.

Sfar, Baruch: *See—*
Shwayder, Warren M.; and Sfar, Baruch, 3,844,019.

Shaffer, Robert S.; and Caldwell, Laurence B., to Bethlehem Steel Corporation. Method of applying a coating to both sides of a moving strip. 3,844,820, Cl. 117-68.000.

Shamlian, Ralph B., to Farallon Industries, Inc. Customized mouthpiece retainer for an underwater breathing apparatus. 3,844,281, Cl. 128-147.000.

Shank, Leland R. Automatic loading mechanism and grinding machine. 3,844,069, Cl. 51-118.000.

Sharma, Ram A.; and Rhodes, James F., to General Motors Corporation. Insulating seal for molten salt battery. 3,844,842, Cl. 136-133.000.

Sharpe, Anthony Nelson, to Lever Brothers Company. Apparatus for performing bacteriological tests automatically. 3,844,896, Cl. 195-139.000.

Shaumian, Grigor Arutjunovich. Multispindle automatic machine. 3,844,187, Cl. 82-3.000.

Shaver, Marvin Bruce: *See—*
Smallwood, Robert Edwards; and Shaver, Marvin Bruce, 3,844,492.

Shaw, Allen Frederick, to Superflexit Limited. Dissipation of electrostatic charges from insulating materials. 3,845,186, Cl. 264-104.000.

Shaw, David N.: *See—*
Bulkley, Clifford T.; and Shaw, David N., 3,844,688.

Sheeler, Calvin W., Jr.: *See—*
Horai, John C.; and Sheeler, Calvin W., Jr., 3,844,804.

Sheeto, Joseph John, Jr.: *See—*
Chang, Catherine Teh-Lin; Sheeto, Joseph John, Jr.; and Beutel, Jacob, 3,844,790.

Shelkova, Irina Sergeevna: *See—*

Gurvich, Yakov Abramovich; Grinberg, Alexandr Afroimovich; Styskin, Evgeny Lvovich; Kumok, Simona Tevievna; Sobolev, Valerian Mikhailovich; Sorokin, Eduard Sergeevich; Shelkova, Irina Sergeevna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich;and Rutman, Grigory Iosifovich, 3,845,142.

Shell Oil Company: *See—*
Breitigam, Walter V.; and Henderson, Bennett M., 3,844,960.
Geymer, Douglas O., 3,844,928.

Shema, Bernard F.: *See—*
Brink, Robert H., Jr.; Shema, Bernard F.; and Swered, Paul, 3,845,216.

Shen, Tsung-Ying; and Clark, Robert L., to Merck & Co., Inc. 4-Oxo-4,5-dihydrothieno[3,2-c]pyridines. 3,845,065, Cl. 260-293.80c.

Shepelyakovsky, Konstantin Zakharovich: *See—*
Krendel, Leonid; Nikonov, Vladimir Filippovich; Ognevsky, Viktor Alexeevich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Palkin, Valery Evseevich; Pakhomov, Anatoly Vladimirovich; Stepin, Anatoly Loginovich; Trofimov, Oleg Fedorovich; Shpelyakovsky, Konstantin Zakharovich; Ryskind, Alexandr Moiseevich; Shklyarov, Isaak Nakhimovich; Rabin, Moisei Osipovich; Kalner, Veniamin Davydovich; and Fishkis, Mikhail Mironovich, 3,844,852.

Shepherd, Lawrence H., Jr., to Ethyl Corporation. Preparation of berylliam hydride. 3,845,199, Cl. 423-645.000.

Sherman & Reilly, Inc.: *See—*
Chadwick, William H., Jr., 3,844,536.

Sherman, Edward: *See—*
Dunlop, Andrew P.; Sherman, Edward; and Wuskell, Joseph P., 3,845,138.

Sherman, James Leonard, to Du Pont de Nemours, E. I., and Company. Deoxidation of copper. 3,844,772, Cl. 75-76.000.

Sherwin, Alton E.: *See—*
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Sheshuko, Elena Gavrilovna: *See—*
Kolesnikov, Alexandr Pavlovich; Schegolev, Gleb Stepanovich; Granovsky, Semen Abramovich; Stankevich, Ljudmila Ivanovna; and Smolyarov, Ljustien Grigorievich, 3,844,681.

Shiga, Tokio; and Nomura, Kikuziro, to Toyoda Koki Kabushiki Kaisha. Cam grinding machine. 3,844,068, Cl. 51-101.00r.

Shigeno, Shunichi: *See—*
Takahashi, Kihei; and Shigeno, Shunichi, 3,844,014.

Shimada, Takeo; Yokota, Yukio; and Hayashi, Jun, to Fuji Photo Film Co., Ltd. Reversal multi-layer color photographic materials. 3,844,784, Cl. 96-22.000.

Shimizu, Toshimasa: *See—*
Totsu, Katsuyuki; and Shimizu, Toshimasa, 3,845,373.

Shimotori, Akira, to Nihon Regulator Co., Ltd. Rotational angle transducer. 3,845,377, Cl. 318-662.000.

Shinetsu Chemical Company: *See—*
Takahata, Shigeru; Suemura, Mitsuhiro; Noguchi, Masaru; and Ohdan, Kenji, 3,844,723.
Takamizawa, Minoru; Hayashi, Takayoshi; and Takita, Masatoshi, 3,844,915.

Shinichiro, Nagashima: *See—*
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Shinozaki, Takashi: *See—*
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Shionogi & Co., Ltd.: *See—*
Nagata, Wataru; and Hayase, Yoshio, 3,845,175.

Shiota, Shunsuke; and Sohtome, Takao, to Ricoh Company Ltd. Method of preparing photosensitive surfaces. 3,844,919, Cl. 204-181.000.

Shirai, Sakae; and Sasamoto, Keigo. Electrical conductive floor tile and method for making same. 3,845,353, Cl. 317-2.00r.

Shklyarov, Isaak Nakhimovich: *See—*
Krendel, Leonid; Nikonov, Vladimir Filippovich; Ognevsky, Viktor Alexeevich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Palkin, Valery Evseevich; Pakhomov, Anatoly Vladimirovich; Stepin, Anatoly Loginovich; Trofimov, Oleg Fedorovich; Shpelyakovsky, Konstantin Zakharovich; Ryskind, Alexandr Moiseevich; Shklyarov, Isaak Nakhimovich; Rabin, Moisei Osipovich; Kalner, Veniamin Davydovich; and Fishkis, Mikhail Mironovich, 3,844,852.

Shoemaker, John Robert, to AMP Incorporated. Tubular conductor-in-slot connecting device. 3,845,455, Cl. 339-97.00r.

Shoot, Lyle E., to Mallory, P. R. & Co., Inc. Cathode electrode for operation under conditions of reverse polarity voltage. 3,845,364, Cl. 317-230.000.

Showa Drum Manufacturing Co., Ltd.: *See—*
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Showa Industries Co., Ltd.: *See—*
Mizutani, Masumi; Hata, Fukuo; and Kamatani, Hironu, 3,844,159.

Shpadi, Evgeny Ivanovich: *See—*
Pershin, Valentin Andreevich; Shpadi, Evgeny Ivanovich; Lasutkin, Gennady Vasilievich; Pichugin, Alexei Dmitrievich; and Trubin, Vladimir Nikolaevich, 3,844,545.

Shroff, Shrenik: *See—*
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Wilson, Christopher L.; and Shuffman, Oscar, 3,844,876.

Shuffman, Oscar: *See—*
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Shuford, Lloyd N., to Simplimatic Engineering Company. Quick adjusting guide rail for conveyor. 3,844,405, Cl. 198-204.000.

Shuin, Masakazu, to Mitsui Mining & Smelting Co., Ltd. Process for treating electrolytic manganese dioxide. 3,844,912, Cl. 204-96.000.

Shuler, F. William; and Dyck, John. Folding system for multi-sectional implement. 3,844,358, Cl. 172-311.000.

Shults, Gary W.; and Wierbicki, Eugen, to United States of America, Army. Method of producing corned beef. 3,845,227, Cl. 426-266.000.

Shwayder, Warren M.: *See—*
Shwayder, Warren M.; and Sfar, Baruch (said Sfar assor. to said), 3,844,019.

Shwayder, Warren M.; and Sfar, Baruch, said Sfar assor. to said Shwayder, Warren M. Saw and impact resistant security bar and method of making same. 3,844,019, Cl. 29-420.500.

Sibgatulin, Kharis Malikovich: *See—*
Lepp, Vladimir Romanovich; Sibgatulin, Kharis Malikovich; and Cherkasov, Jury Nikolaevich, 3,845,380.

Sick, Erwin: *See—*
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Siddiqui, Iftikhar Hussain: *See—*
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Siegal, Jack. Nail nippers. 3,844,032, Cl. 30-28.000.

Siemens Aktiengesellschaft: *See—*
Fleer, Otto; and Grill, Hubert, 3,844,039.
Hofmann, Horst; and Katz, Helmut, 3,844,823.
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Siemon Company, The: *See—*
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Sigg-Grutter, Trudi: *See—*
Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Sigg-Grutter, Trudi; and Wild, Jost, 3,845,134.

Signetics Corporation: *See—*
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Signode Corporation: *See—*
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Simco Company, Inc., The: *See—*
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Simizu, Tosio: *See—*
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Simplimatic Engineering Company: *See—*
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Simpson, Alexander Bowen: *See—*
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Sindoris, Arthur R.: *See—*
Jones, Howard S., Jr.; and Sindoris, Arthur R., 3,845,488.

Sindt, Melvin R., to Boeing Company, The. Induction heater apparatus and system. 3,845,268, Cl. 219-10.770.

Singer Company, The: *See—*
Batson, William A., 3,844,380.
Zaleski, John F., 3,845,417.

Singer Company, The, mesne: *See—*
Stavis, Gus; and Odell, Thomas W., 3,844,506.

Singer, Malcolm S., to Chevron Research Company. N-cyanoformyl thiolcarbamates. 3,845,091, Cl. 260-455.00a.

Singery, Jean-Michel: *See—*
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Singh, Balwant, to American Cyanamid Company. Photosensitive azido material. 3,844,793, Cl. 96-91.00n.

Sirianni, Aurelio Frederick: *See—*
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Sirrenberg, Wilhelm; Behrenz, Wolfgang; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O,O-Dialkyl-O-(1,2-dibromo-2,2-dichlorethyl)-thionophosphoric acid ester. 3,845,174, Cl. 260-963.000.

Skinner, James L.: *See—*
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Wunderlich, Donald K.; and Skinner, James L., 3,844,930.

Sklute, Jerome: *See—*
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Skolnik, Jacob: *See—*
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Slattery, Robert E. Vehicle door latch with forked latching rotors. 3,844,593, Cl. 292-48.000.

Slemmons, Charles O., to General Tire and Rubber Company, The. Gripper assembly for jacking mechanisms. 3,844,002, Cl. 24-263.0dh.

Sletten, Terry L., to Valeron Corporation, The. Cutting tool. 3,844,008, Cl. 29-96.000.

Sloan, Gilbert J., to Du Pont de Nemours, E. I., and Company. Zone-melting apparatus. 3,844,724, Cl. 23-273.0sp.

Sluyter, Robert Johannes: *See—*
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Smallwood, Robert Edwards; and Shaver, Marvin Bruce, to Dominion Engineering Works, Limited. Grinding mill bolted construction. 3,844,492, Cl. 241-182.000.

Smart, Orpha J. Paint can pour spout with brush support and attachment. 3,844,457, Cl. 222-570.000.

Smidth, F. L., & Co.: *See—*

Petersen, Helge Hogh, 3,844,742.
Smith, Colin F. G.; and Hayward, Malcolm L., to International Standard Electric Corporation. Tensile rope joint and method of making same. 3,844,665, Cl. 403-267.000.
Smith, Daniel W.: *See—*
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Smith, Erwin Donald; Tull, Thomas W.; and Fenton, Frank W. Pallet loading machine. 3,844,422, Cl. 214-6.00p.
Smith, Frederick R., to FMC Corporation. Absorbent mass of alloy fibers of regenerated cellulose and polyacrylic acid salt of alkali-metals or ammonium. 3,844,287, Cl. 128-285.000.
Smith, James D. B.: *See—*
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Smith, Joe H.: *See—*
Clarady, Leroy E.; McSweeney, J. Jay; and Smith, Joe H., 3,845,374.
Smith, Kenneth C., to Dayco Corporation. Printing blanket bar assembly with edging strip locking means. 3,844,214, Cl. 101-415.100.
Smith, Richard L.: *See—*
Uraneck, Carl A.; and Smith, Richard L., 3,845,030.
Smith, Richard N., to Sybron Corporation. Electrodialytic recovery of acid and insoluble products from spent liquors. 3,844,927, Cl. 204-301.000.
Smith, Robert M. Display system for musical tones. 3,845,468, Cl. 340-148.000.
Smith, Tom F., to United States T.R.A.D. Corporation. Converter lens. 3,844,639, Cl. 350-181.000.
Smithers, Philip G. K., to Frico Products Corporation, mesne. Windscreen wipers. 3,843,994, Cl. 15-250.320.
Smolyarov, Ljustien Grigorievich: *See—*
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Smyth, Michael James; Murdoch, Robert; and Gibson, John Anderson, to United Kingdom Atomic Energy Authority. Separation apparatus. 3,844,926, Cl. 204-299.000.
Smythe, George Edward, to U.S. Philips Corporation. Medical ventilator including a fail-safe device. 3,844,280, Cl. 128-145.600.
Snam Progetti S.p.A.: *See—*
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Romano, Ugo; Maoggi, Pietro Entonio; and Mauri, Marcello Massi, 3,845,072.
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Snavely, Earl S., Jr.; and Bertness, Theodore A., to Mobil Oil Corporation. Petroleum production by steam injection. 3,844,349, Cl. 166-272.000.
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Sobel, Jay E., to Universal Oil Products Company. Alkylation process with fluorination step utilizing recycled HF catalyst. 3,845,158, Cl. 260-683.490.
Sobel, Robert. Flexible hinge assembly. 3,843,996, Cl. 16-150.000.
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Societe Anonyme de Telecommunications: *See—*
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Societe Berri-Balzac: *See—*
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Societe Civile d'Etudes de Centrifugation: *See—*
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Societe d'Etudes et de Recherches Magnetiques SERMAG: *See—*
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Societe dite: Lebocey Industries: *See—*
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Malen, Charles; Desnos, Monique; and Poignant, Jean-Claude, 3,845,074.
Societe Generale de Constructions Electriques et Mecanique (Alsthom): *See—*
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Societe Honeywell Bull (Societe Anonyme): *See—*
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Soderstrom, Nils Erik: *See—*
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Sodickson, Lester A.; and Lim, Franklin, to Damon Corporation. Press for progressive compression of liquid-bearing absorbent article. 3,844,717, Cl. 23-253.00r.
Sohtome, Takao: *See—*
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Solda, Robert B.: *See—*
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Solt, Paul E., to Fuller Company. System for conveying solid particulate materials. 3,844,446, Cl. 222-61.000.
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Soma, Shoji; and Sato, Ikuro, to Nippon Electric Company, Limited. Antenna system. 3,845,483, Cl. 343-761.000.
Somlo, Tibor; Rochat, Alain Claude; and Murphy, James, to Ciba-Geigy AG. Process for the regeneration of phosphorus oxychloride or oxybromide from reaction mixtures. 3,845,194, Cl. 423-300.000.
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Soury, Jean-Pierre; Lambert, Andre; and Barandon, Rene, to Societe Generale de Constructions Electriques et Mecanique (Alsthom). Gate valve for the transfer of high purity gas. 3,844,307, Cl. 137-271.000.
Spears, Jesse W.: *See—*
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Spencer, Donald J.: *See—*
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Spencer, Harvey J., to Paper Converting Machine Company. Machine and method for winding. 3,844,501, Cl. 242-56.00a.
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Spielberg, David H.; Janowski, Kenneth R.; and Levesque, Charles J., to Universal Oil Products Company. Sintering process for metallizing non-metal substrates. 3,844,830, Cl. 117-160.00r.
Spurr, Robert, to Notifier Company. Flow controlled switch operated by a pivotal shaft. 3,845,259, Cl. 200-81.90r.
Squassoni, Gino F.: *See—*
Jackson, Earl V.; Schoppe, Wayne F.; Squassoni, Gino F.; Warter, Peter J.; Herr, Gerald A.; Hoesly, David D.; Randall, John M.; Schroeder, Russell G., II; Webb, Douglas D.; Lange, Clark V.; and Kelsch, Robert J., 3,844,651.
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St. Pierre, Robert; and St. Pierre, Leo. Bottle and cap locking structure. 3,844,438, Cl. 215-221.000.
Stacey, Andrew Gordon, to British Ropes Limited. Production of low alloy steel wire. 3,844,848, Cl. 148-12.00b.
Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katharina; heiress); Beyerle, Rudi; Kunze, Wilhelm; Nitz, Rolf-Eberhard; and Scholtholt, Josef, to Cassella Farbwerke Mainkur Aktiengesellschaft. Basically substituted 1(2H)-phthalazinone derivatives. 3,45,052, Cl. 260-250.00p.
Stachel, Ingeburg Lydia Katharina: *See—*
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Stathakos, Dimitri, to Center for Blood Research. Molecular fractionation. 3,844,925, Cl. 204-299.000.
Staub, Anthony F.; and Staub, Norman T. Photographic print marker. 3,844,253, Cl. 118-242.000.
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Stavis, Gus; and Odell, Thomas W., to Singer Company, The, mesne. Missile guidance system. 3,844,506, Cl. 244-3.150.
Stearns, Gabriel E., to Boeing Company, the. Variable ramp exhaust nozzle and clamshell reverser. 3,844,482, Cl. 239-265.370.
Steel, Frances R., to Motorola, Inc. Crystal oscillator having spurious oscillation suppression circuit. 3,845,410, Cl. 331-116.00r.
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Karrip, Alexander A.; 3,844,079.
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Stein, Reinhardt P., to American Home Products Corporation. Process for the cleavage of A-ring aromatic, steroidal methyl ethers. 3,845,084, Cl. 260-397.500.
Steinberg, Samuel B., to Air Techniques, Inc. Particulate detector system. 3,845,480, Cl. 340-236.000.
Steinman, Martin, to Schering Corporation. 1-Polyfluoroalkyl-1,4-benzodiazepin-2-thiones. 3,845,039, Cl. 260-239.30d.
Stelzer, Raymond F., to Wagner Electric Corporation. Control valve and system. 3,844,626, Cl. 303-68.000.
Stendel, Wilhelm: *See—*
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Steuerwald, Wilfred Lee Roy, to Deere & Company. Mower guard. 3,844,095, Cl. 56-310.000.
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Stiebel, Ariel I., to McLaughlin, Ward & Co. Electronic rotational sensor. 3,845,375, Cl. 318-463.000.
Stiles, John L.; and Ziehl, Herbert E., to General Motors Corporation. Fluid pump noise reduction means. 3,844,696, Cl. 418-181.000.
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Strecke, Heinz. Containers for electroplating baths. 3,844,542, Cl. 259-75.000.
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Stringer, Myron Scott; Smith, Daniel W.; MacIvergan, Robert G.; and Elderbaum, Robert W., to Kellwood Company. Packaging apparatus. 3,844,092, Cl. 53-188.000.
Stroezel, Reinhold, to Bosch, Robert, G.m.b.H. One-way clutch arrangement. 3,844,392, Cl. 192-45.000.
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Sturtevant, Rodney L. Electronic hand tool. 3,844,012, Cl. 29-203.00h.
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Surace, Filippo; Rogora, Edoardo; and Bassi, Aldo, to Alfa Romeo S.p.A. Device for regulating the amount of fuel injected by injection systems of internal combustion engines. 3,844,265, Cl. 123-139.00e.
Surribas, Jorge Juan Ventura; and Morell, Juan Coll. Apparatus and method for tensioning cables. 3,844,023, Cl. 29-452.000.
Sutton, David L.; and Carter, Lloyd G., to Halliburton Company. Method of plugging a well. 3,844,351, Cl. 166-243.000.
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Suzuki, Shigeyoshi, to Ogawa & Co., Ltd. Coffee carbonated beverage. 3,845,220, Cl. 426-45.000.
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Szekely, Laszlo, to Autoipari Kutato Intezet. Brake machanism for motor vehicles. 3,844,385, Cl. 188-70.00b.
Szinai, Stephen Slomo, to Lilly, Eli, and Company. Process for preparing adamantane derivatives. 3,845,131, Cl. 260-586.00r.
Tabara, Yoshijiro; Akiyama, Hiroshi; Sato, Shoji; Miyata, Seiji; and Sakunaga, Kenichi, to Mitsubishi Rayon Company Limited. Apparatus for the continuous preparation of a polymeric solution. 3,844,722, Cl. 23-267.00r.
Taguchi, Nobuo; and Ono, Takehiko, to Tokyo Shibaura Electric Company, Ltd. Positioning apparatus. 3,845,284, Cl. 235-150.100.
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Takagi, Toru; Ochi, Osamu; and Mizushima, Yoshihiko, to Nippon Telegraph and Telephone Public Corporation. Acoustic-electro converting device having semiconductor granules. 3,845,251, Cl. 179-122.000.
Takahashi, Isoji: *See—*
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Takahashi, Kenzo. Freight transporting container. 3,844,203, Cl. 98-33.000.
Takahashi, Kihei; and Shigeno, Shunichi, to Yoshida Kogyo Kabushiki Kaisha. Device for holding a slider during assemblage of a fastener chain therethrough. 3,844,014, Cl. 29-207.5sl.
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Takahata, Shigeru; Suemura, Mitsuhiro; Noguchi, Masaru; and Ohdan, Kenji, to Shinetsu Chemical Company. Multi-stage counter-current liquid-liquid contact apparatus. 3,844,723, Cl. 23-270.500.
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Takenaka, Haruo; Okajima, Mitsuo; Hiratsuka, Nobuo; and Yuyama, Yasuaki, to Fuji Photo Film Co., Ltd. Triacetyl cellulose resin films. 3,844,988, Cl. 260-16.000.
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Takeshita, Tsuneichi, to Du Pont de Nemours, E. I., and Company. Tetrapolymer of ethylene/C_3-C_{12} alpha-monoolefin/maleic anhydride/C_6-C_{22} nonconjugated diene. 3,845,159, Cl. 260-785.0bb.
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Tanahashi, Kunio, to American Cyanamid Company. Method of producing an acrylic fiber having an improved touch like animal hair. 3,844,825, Cl. 117-138.8ua.
Tangen, Walter, to Gewako S.A. Arrangement related to inflateable life rafts. 3,843,983, Cl. 9-2.00a.
Tani, Masayuki: *See—*
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Taylor, John E.; and Brandstadter, Jack M., to Pneumo Dynamics Corporation. Fire control system. 3,844,196, Cl. 89-41.0cf.
Taylor, John Edward; and Fitzpatrick, Roger Sean, to Ultrasoni Machines Limited. Car washing machine. 3,844,480, Cl. 239-186.000.
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Theriault, Robert John; Fager, Earl Elmer; and Wideburg, Norman Earl, to Abbott Laboratories. Process of preparing 2-hydroxy-2-carboxylthyl-N (7-or 8-chloro-4-quinolinyl)anthranilate. 3,844,889, Cl. 195-51.00r.

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Thomas, Robert J., to Dow Chemical Company, The. High performance polysulfonate resin. 3,845,015, Cl. 260-49.000.

Thompson, Harold A. Water reacting means facilitating loading of boat trailers. 3,844,430, Cl. 214-500.000.

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Thresher, Richard G.: *See—*
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Throckmorton, Morford C., to Goodyear Tire & Rubber Company, The. Catalyst for the polymerization of conjugated diolefins. 3,844,974, Cl. 252-429.00b.

Throckmorton, Morford C.; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Polymerization of butadiene with stabilized catalyst system. 3,845,029, Cl. 260-94.300.

Tiedemann, William H.: *See—*
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Timbs, Arthur Edwards, to United Kingdom Atomic Energy Authority. Ultrasonic testing apparatus. 3,845,463, Cl. 340-5.00r.

Timken Company, The: *See—*
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Tiranov, Gennady Petrovich; Kuligin, Georgy Alexandrovich; and Dzhermakian, Karen Jurievich. Device for spreading oriented stockings. 3,844,621, Cl. 302-2.00r.

Tirolap Sarl: *See—*
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Tischler, Edward Joseph, to Ecodyne Corporation. Brine valve assembly. 3,844,309, Cl. 137-399.000.

Titan Tool and Die Company, Inc.: *See—*
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Tokyo Magnetic Printing Co., Ltd.: *See—*
Watase, Fumio; Nakauchi, Shunsaku; Kodera, Seiichi; and Namikawa, Mamoru, 3,845,361.

Tokyo Research Service Kabushiki Kaisha: *See—*
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Tokyo Shibaura Electric Company, Ltd.: *See—*
Taguchi, Nobuo; and Ono, Takehiko, 3,845,284.

Tolle, Gunter. Work clamp feeding mechanism for sewing machines. 3,844,234, Cl. 112-70.000.

Tolleson, Leon H.; Thomas, Paul M.; and Mizer, Robert T., to Tomax Corporation. Prefabricated panel with door opening. 3,844,075, Cl. 52-100.000.

Tolliver, Wilbur E., to New York Wire Mills Corporation. Method and fabric for pipe reinforcement. 3,844,510, Cl. 245-1.000.

Tolliver, Wilbur E., to New York Wire Mills Corporation. Method and fabric for pipe reinforcement. 3,844,511, Cl. 245-2.000.

Tolzman, Gary L.: *See—*
Troiani, Charles; and Tolzman, Gary L., 3,845,401.

Tomatu, Toshiharu; Iwata, Tadao; and Oi, Hidesaburo, to Mitsui Petrochemical Industries, Ltd. Sulfoalkyl acrylate-olefin copolymers cation exchangers. 3,844,986, Cl. 260-2.20r.

Tomax Corporation: *See—*
Tolleson, Leon H.; Thomas, Paul M.; and Mizer, Robert T., 3,844,075.

Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Stauffer, Thomas Arlo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with key coding in a key address memory. 3,844,379, Cl. 84-1.010.

Tong, Yulan C., to Dow Chemical Company, The. Aminoalkyl derivatives of 10H-pyrazino (2,3-B) (1,4)benzothiazine. 3,845,044, Cl. 260-243.0an.

Top-Scor Products, Inc.: *See—*
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Moneymaker, John R.; and Meyer, Maurice C., 3,845,224.

Toray Industries, Inc.: *See—*
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Tsuchiyama, Yoshio; Oka, Toshihiko; Takai, Jun; Fukuda, Katsuhiro; and Ando, Akio, 3,844,099.

Torii, Nozomu; and Furuya, Yoshikatsu, to Aisin Seiki Kabushiki Kaisha. Keyless door locking method and apparatus. 3,844,596, Cl. 292-216.000.

Toshida, Shunichi; and Ozora, Takashi, to Nissan Motor Company, Limited. Closed loop type disc brake. 3,844,384, Cl. 188-72.500.

Totsu, Katsuyuki; and Shimizu, Toshimasa. Motor-driven screw driver with automatic stopping means. 3,845,373, Cl. 318-434.000.

Tout, Stanley D.: *See—*
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Townsend Engineering Company: *See—*
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Townsend, Ray R., to Townsend Engineering Company. Automatic blade control mechanism for meat skinning machines. 3,844,207, Cl. 99-589.000.

Toy, Paul Charles, Jr., to Marshal and Williams Company. Apparatus for controlling the winding of web material on a dye beam. 3,844,502, Cl. 242-67.10r.

Toyoda Koki Kabushiki Kaisha: *See—*
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Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, to Ajinomoto Co., Inc. N-substituted amino acids and novel ester. 3,845,097, Cl. 260-471.00c.

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Treace, John R., to Richards Manufacturing Co., Inc. Balanced suspension sling. 3,843,979, Cl. 5-327.000.

Treffner, Walter S.; and Filer, Frank P., to General Refractories Company. Burned periclase brick and method of making. 3,844,802, Cl. 106-58.000.

Treharne, Timothy John Mingay; and Tuck, David Henry, to Viskase Limited. Process for obtaining corium from bovine hide. 3,843,997, Cl. 17-47.000.

Tremblay, Daniel R. Hockey type blade. 3,844,555, Cl. 273-67.00a.

Tri-Matic, Inc.: *See—*
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Trilling, Ted R. Differential amplifier having active feedback circuitry. 3,845,404, Cl. 330-69.000.

Trinity Industries, Inc.: *See—*
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Trofimov, Oleg Fedorovich: *See—*
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Troiani, Charles; and Tolzman, Gary L., to Honeywell Information Systems, Inc. Sense amplifier threshold tester. 3,845,401, Cl. 330-2.000.

Tronzo, Raymond G. Prosthesis for femoral shaft. 3,843,975, Cl. 3-1.000.

Troster, Helmut: *See—*
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Troxel Manufacturing Company: *See—*
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Tsaras, Eleftherios. Candles and manufacture thereof. 3,844,706, Cl. 431-288.000.
Tsuchihashi, Genichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. Method of preparing aldehydes. 3,845,076, Cl. 260-340.500.
Tsuchiya, Kaichi; and Shinichiro, Nagashima, to Canon, Inc. Organic photoconductive materials. 3,844,781, Cl. 96-1.500.
Tsuchiyama, Yoshio; Oka, Toshihiko; Takai, Jun; Fukuda, Katsuhiro; and Ando, Akio, to Toray Industries Inc. Method and apparatus for doffing full bobbins on textile machines such as draw-twister. 3,844,099, Cl. 57-53.000.
Tubis, Manuel; Cohen, Marvin B.; and Gilliam, Calvin D., to United States of America, Veteran Affairs. . 3,845,202, Cl. Lung scanning protein macroag.
Tuck, David Henry: *See—*
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Tup (Panana) S.A.: *See—*
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Tupper, Earl Silas, to Tup (Panana) S.A. Control of erosion. 3,844,124, Cl. 61-3.000.
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Twyford, Robert H., to Mechanical Enterprises Incorporated. Switch with liquid containing tube for keyboard use. 3,845,264, Cl. 200-214.000.
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Ultrasoni Machines Limited: *See—*
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UMC Industries, Inc.: *See—*
Fishel, Larry R.; and Pescetto, James R., 3,845,469.
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Union Carbide Corporation: *See—*
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Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Aqueous based thermosetting acrylamide-acrylic copolymer coating composition. 3,845,066, Cl. 260-29.6wb.

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von Ballmoos, Fritz; Grieder, Traugott; Grohmann, Herbert; and Gutmann, Rolf. Method and apparatus for the adjustment of a plurality of floodlights. 3,845,351, Cl. 315-293.000.

von Brachel, Hanswilli; and Cornelius, Dieter, to Cassella Farbwerke Mainkur Aktiengesellschaft. Process for producing water-insoluble azo dyestuffs containing sulfonyl groups using a metal sulfinate. 3,845,034, Cl. 260-205.000.

von Froreich, Andre. Sedimentation instrument for body fluids and method of microscopic examination of the sediment. 3,844,662, Cl. 356-246.000.

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Waddington, William H. Self-loading railway car. 3,844,432, Cl. 214-517.000.

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Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of percarboxylic acids. 3,845,112, Cl. 260-502.00r.

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Yovich, Daniel J.; Stout, John L.; and Tribbey, Ralph E., to Kankakee Paint Manufacturing Company, Inc. Biostat and paint composition. 3,845,212, Cl. 424-270.000.
Yuminaka, Takeo: *See—*
Iwasaka, Tatsuo; Yuminaka, Takeo; and Matsuzawa, Hideto, 3,844,383.
Yuyama, Yasuaki: *See—*
Takenaka, Haruo; Okajima, Mitsuo; Hiratsuka, Nobuo; and Yuyama, Yasuaki, 3,844,988.
Zaffaroni, Alejandro, to ALZA Corporation. Agmatine prostaglandins. 3,845,111, Cl. 260-501.140.
Zahner, John C.: *See—*
Yan, Tsoung-Yuan; and Zahner, John C., 3,845,150.
Zaiser, Wolfgang, to Daimler-Benz Aktiengesellschaft. Actuating mechanism for engageable devices in planetary gear transmissions. 3,844,393, Cl. 192-87.110.
Zaleski, John F., to Singer Company, The. Gyromagnetic circuit element. 3,845,417, Cl. 333-24.100.
Zamiara, Anthony W., to Maplecrest Sausage Co., Inc. Cooling system for sausages. 3,844,135, Cl. 62-375.000.
Zanca, Joseph. Means for forming a hole in the article during blow molding. 3,844,698, Cl. 425-155.000.
Zeiss, Philip M.: *See—*
Aronstein, Jesse; Harding, William E.; and Zeiss, Philip M., 3,845,286.
Zelinski, Paul A.: *See—*
Clements, John L.; Keehn, Paul J.; Jones, Leo V., Jr.; and Zelinski, Paul A., 3,845,425.
Zenith Radio Corporation: *See—*
Schwartz, James W., 3,845,241.
Zessin, Horst: *See—*
Block, Hans-Jurgen; Greve, Heinz; and Zessin, Horst, 3,844,199.
Zettergren, Birger; and Ahlgren, Hans Hjalmar; deceased (by Ahlgren, Ella Anita; and Cederlund, Elsa Margareta; administratrix's). Rock-drilling machine. 3,844,359, Cl. 173-105.000.
Ziehl, Herbert E.: *See—*
Stiles, John L.; and Ziehl, Herbert E., 3,844,696.
Zielke, Alfred, to Elmeg Electro-Mechanik GmbH. Keyboard switch assembly with ball and slider interlock mechanism. 3,845,255, Cl. 200-5.0ea.
Ziemba, Richard T., to General Electric Company. Controlled range fuze. 3,844,217, Cl. 102-70.20r.
Zimmerman, Emil F. High reach attachment for loader. 3,844,435, Cl. 214-776.000.
Zimmermann, Joseph James: *See—*
Troemel, Richard J.; and Zimmermann, Joseph James, 3,844,566.
Ziv, David Moiseevich: *See—*
Drabkina, Lidia Emelianovna; Mazurek, Jury Vatslavovich; Myasoedov, Dmitry Nikolaevich; Prokhorov, Viktor Pavlovich; Kachalov, Vladimir Alexandrovich; and Ziv, David Moiseevich, 3,844,833.
Ziv, Valentina Spiridonovna: *See—*
Drabkina, Lidia Emelianovna; Mazurek, Jury Vatslavovich; Myasoedov, Dmitry Nikolaevich; Prokhorov, Viktor Pavlovich; Kachalov, Vladimir Alexandrovich; and Ziv, David Moiseevich, 3,844,833.
Zobel, Siegfried: *See—*
Hackenberg, Hugert; and Zobel, Siegfried, 3,845,493.
Zoecon Corporation: *See—*
Henrick, Clive A., 3,845,089.
Zollinger, Joseph La Mar, to Minnesota Mining and Manufacturing Company. Alpha, omega-di-s-triazinyl perfluoropolyoxaalkanes. 3,845,051, Cl. 260-248.0cs.
Zolner, William J.: *See—*
Helm, Denis A.; and Zolner, William J., 3,845,309.
Zucconi, Theodore D.: *See—*
Underkofler, William L.; and Zucconi, Theodore D., 3,844,799.
Zugel, Martin J., to Cyclo Index Corporation. Flexible coupling. 3,844,137, Cl. 64-15.00b.
Zumach, Gerhard; Kuhle, Engelbert; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. N,N-Disubstituted-N-(N-alkyl-N-trihalomethyl -sulfenyl-carbamoyloxy)-phenyl)-formamidines. 3,845,103, Cl. 260-479.00c.
Zupancic, Boris, to LEK tovarna farmacevtskih in Kemicnih izdelkov. Method of producing pure perchloromethylmercaptan. 3,845,122, Cl. 260-543.00h.
Zurbuch, Kenneth J.: *See—*
Stone, William M.; Brunschwig, John M.; and Zurbuch, Kenneth J., 3,844,031.
Zweig, Arnold; and Huffman, Kenneth Robert, to American Cyanamid Company. Photosensitive composition containing a photochromic benzoylchromone or dibenzofuran and a strong organic amine base. 3,844,792, Cl. 96-90.0pc.
Zygo Corporation: *See—*
Hunter, George C., 3,844,660.
10/29/74; and Richards, Edward M., to Redactron Corporation. Automatic underlining in an automated typewriter system. 3,844,397, Cl. 197-19.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF OCTOBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barringer, Anthony R., and J. P. Schock, to Barringer Research Ltd. Spectrometer. Re. 28,216, 10–29–74, Cl. 356—93.

Barringer Research Ltd.: *See*—
Barringer, Anthony R., and Schock.

Bell & Howell Co.: *See*—
Kagan, Sholly.

Bell Telephone Laboratories, Inc.: *See*—
Ratliff, Earl T., and Renaut.

Culp, Fred E.: *See*—
Taylor, Richard P., Van Brimer, and Culp.

Eibensteiner, Walter, to U.S. Philips Corp. Tape diverting device in a tape recorder apparatus with drum shift during tape engagement. Re. 28,215, 10–29–74, Cl. 360—85.

Grosjean, Pierre, to Societe Rhodiaceta. Polyamides containing antistatic polyolefins having pendant polyoxyalkylene chains. Re. 28,212, 10–29–74, Cl. 260—857.

Hanes, James W. E., and E. Larralde, to Vetco Offshore Industries, Inc. Motion compensating apparatus. Re. 28,218, 10–29–74, Cl. 175—5.

Kagan, Sholly, to Bell & Howell Co. Paging receiver having cycling mass. Re. 28,213, 10–29–74, Cl. 340—311.

Larralde, Edward: *See*—
Hanes, James W. E., and Larralde.

Malech, Robert G., to New England Merchants National Bank. Antenna with electrically variable reflector. Re. 28,217, 10–29–74, Cl. 343—754.

Maynard, Douglas E. Electroencephalograph monitoring apparatus. Re. 28,214, 10–29–74, Cl. 128—210.

Mead Corp., The: *See*—
Taylor, Richard P., Van Brimer, and Culp.

New England Merchants National Bank: *See*—
Malech, Robert G.

Ratliff, Earl T., and P. W. Renaut, to Bell Telephone Laboratories, Inc. Reed switch having reed surfaces beneath the seal plated with a thin silver layer. Re. 28,220, 10–29–74, Cl. 335—154.

Renaut, Paul W.: *See*—
Ratliff, Earl T., and Renaut.

Schock, Josef P.: *See*—
Barringer, Anthony R., and Schock.

Societe Rhodiaceta: *See*—
Grosjean, Pierre.

Taylor, Richard P., R. H. Van Brimer, and F. E. Culp, to The Mead Corp. Image construction system using multiple arrays of drop generators. Re. 28,219, 10–29–74, Cl. 346—75.

U.S. Philips Corp.: *See*—
Eibensteiner, Walter.

Van Brimer, Russell H.: *See*—
Taylor, Richard P., Van Brimer, and Culp.

Vetco Offshore Industries, Inc.: *See*—
Hanes, James W. E., and Larralde.

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AMP Inc.: *See*—
Bruner, Peter M.

Ace-In-The-Hole, Inc.: *See*—
Wagner, Arthur C.

Aiken, John M. Tool holding clamp. 233,404, 10–29–74, Cl. D8—73.

Aisin Seiki Kabushiki Kaisha: *See*—
Hirasawa, Tadashi, Kasahara, and Kato.

Ajax Hardware Corp.: *See*—
Zagaroli, David P.

Allgeyer, David F., to UMC Industries, Inc. Skirt for frozen food product container. 233,418, 10–29–74, Cl. D9—260.

Amoroso, Nicholas A., to Bright Star Industries, Inc. Bicycle reflector. 233,420, 10–29–74, Cl. D10—111.

Amoroso, Nicholas A., to Bright Star Industries, Inc. Bicycle reflector. 233,421, 10–29–74, Cl. D10—111.

Amoroso, Nicholas A., to Bright Star Industries, Inc. Bicycle reflector. 233,422, 10–29–74, Cl. D10—111.

Andres, William A., L. D. Quanrud, C. J. Koppa, L. F. Becker, W. K. Christoffersen, and J. L. Keely, to Washington Scientific Industries, Inc. Microfilm viewer. 233,482, 10–29–74, Cl. D61—1.

Arent, Milan: *See*—
Martin, Simon, and Arent.

Arnal, Francois. Furniture leg. 233,396, 10–29–74, Cl. D6—194.

Austin, George K., Jr., and H. M. Watt, Analgesia unit. 223,484, 10–29–74, Cl. D83—1.

Avollo, Donald R., to Xerox Corp. Toner bottle or the like. 233,414, 10–29–74, Cl. D9—67.

Barela, Manuel T. Earth treating machine. 233,462, 10–29–74, Cl. D35—2.

Barmherzig, Sam. Ignition lock housing. 233,407, 10–29–74, Cl. D8—113.

Becker, Larry F.: *See*—
Koppa, Charles J., Andres, Quanrud, Becker, Christoffersen, and Keely.

Bio-Medical Sciences, Inc.: *See*—
Weinstein, Berel, Sagi, and Godsey.

Bobbie Peach Enterprises, Inc.: *See*—
Pietsch, Barbara C.

Bowmar Instrument Corp.: *See*—
Fossella, Gregory F., Rhoads, and Hoffman.

Braun, Aktiengesellschaft: *See*—
Lubs, Dietrich.

Bridgeport Metal Goods Mfg. Co., The: *See*—
Moore, Arthur H.

Bright Star Industries, Inc.: *See*—
Amoroso, Nicholas A.
Amoroso, Nicholas A.
Amoroso, Nicholas A.

Bruner, Peter M., to AMP Inc. Terminal contact. 233,438, 10–29–74, Cl. D26—1.

Buan, Danilo P.: *See*—
Groswith, Charles T., III, Buan, and Estes.

Buck-Pitt, William H. Winged dwelling structure. 233,429, 10–29–74, Cl. D13—1.

Canadian Marconi Co.: *See*—
Lee, Herman A.

Canteen Corp.: *See*—
Kluge, Eldor A., Kosirog, and Wiebe.

Chinn, Steven M., and G. J. Tyrer. Toy figure. 233,451, 10–29–74, Cl. D34—2.

Christian, Daniel H., and G. L. Payne, to International Telephone and Telegraph Corp. Lightweight headset. 233,444, 10–29–74, Cl. D26—14.

Christiansen, Godtfred K., to A. G. Interlago. Joint for a toy figure. 233,456, 10–29–74, Cl. D34—15.

Christoffersen, William K.: *See*—
Koppa, Charles J., Andres, Quanrud, Becker, Christoffersen and Keely.

Coleco Industries, Inc.: *See*—
Huffman, Donald.

Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See*—
Montagne, Jean B.

Coney, Otis M. Lamps, comprising plastic or the like. 233,467, 10–29–74, Cl. D48—23.

Congoleum Industries, Inc.: *See*—
Mansolillo, Robert D.

Copple, Francis T., to Rexnord Inc. Chain assembly and disassembly tool 233,403, 10–29–74, Cl. D8—51.

Cox Systems Ltd.: *See*—
Jenkins, David C., and Levin.

Creative Tools, Inc.: *See*—
Whiteford, Carlton L.

Culver, Irven H.: *See*—
Jensen, Volmer S., and Culver.

Darlington, William E., to F.P.I. Inc. Edge attachment for a carpenter's square or the like. 233,471, 10–29–74, Cl. D52—6.

Delamater, William B. Cleaning implement for barbeque grills. 233,401, 10–29–74, Cl. D7—184.

De Matteo, Mario. Toy microscope. 233,455, 10–29–74, Cl. D34—15.

Dow Chemical Co., The: *See*—
Steiner, Henry.

Dunhill, Alfred of London, Inc.: *See*—
Weir, Robert J.

Duryea, Ronald A. Airplane. 233,425, 10–29–74, Cl. D12—71.

Eastman Kodak Co.: *See*—
Laughon, Thomas C.

Ehmke, John R. Catch basin filler. 233,434, 10–29–74, Cl. D23—1.

Electrohome Ltd.: *See*—
McQuarrie, Harvey K., and Tate.

Empire Furniture Corp.: *See*—
Keller, Huey T.

Esso Research and Engineering Co.: *See*—
MacConkey, James S., and Tompkins.

Estes, Davida R.: *See*—
Buan, Danilo P., Groswith, and Estes.

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Fassauer, Arthur L., to Fassauer Industries, Inc. Ash tray. 233,447, 10–29–74, Cl. D27—27.

Fassauer Industries, Inc.: *See*—
Fassauer, Arthur L.

Forrest, John W.: *See*—
Fossella, Gregory F., Rhoads, Hoffman, MacLeod, and Forrest. 233,440.

Fossella, Gregory F., P. K. Rhoads, L. R. Hoffman, A. R. MacLeod, and J. W. Forrest, to Bowmar Instrument Corp. Calculator. 233,440, 10–29–74, Cl. D26—5.

France Bed Co. Ltd.: *See*—
Ikeda, Minoru, 233,383.

Freeman, Spencer. Ornament for personal wear. 233,464, 10–29–74, Cl. D45—17.

Frey, Jack L. Fireman's multiple purpose hand tool. 233,405, 10–29–74, Cl. D8—76.

Friedman, Harvey L. Wall mountable bracket. 233,385, 10–29–74, Cl. D6—114.

Gardisette International AG: *See*—
Schroeder, Peter E. 233,465.

Geisler, Robert C. Reel for cords and the like. 233,411, 10–29–74, Cl. D8—222.

General Electric Co.: *See*—
Kalnass, Andrew. 233,479.

General Time Corp.: *See*—
Kirby, Robert E. 233,435.
Kirby, Robert E. 233,436.

Gillette Co., The: *See*—
Pomfret, Edward E. 233,417.

Godsey, Frank W.: *See*—
Weinstein, Berel, Sagi, and Godsey. 233,472.

Gonzalez, Ralph A. Tray for hair stylist's implements. 233,486, 10–29–74, Cl. D8—10.

Groswith, Charles T., III, D. P. Buan, and D. R. Estes, to Velo-Bind, Inc. Power-operated punch. 233,477, 10–29–74, Cl. D55—1.

Hall, Frank E. Combined clothes washer and hamper. 233,470, 10–29–74, Cl. D49—1.

Hammett, Roy B. Support bracket for a vacuum bottle or similar article. 233,386, 10–29–74, Cl. D6—136.

Harper, Claude M., to Roto-Master, Inc. Straightening and aligning fixture for turbo shafts. 233,474, 10–29–74, Cl. D54—13.

Hazelwood, Carl G. Combination table and chairs. 233,391, 10–29–74, Cl. D6—177.

Hestand, Dow L. Automobile module for mounting communication equipment. 233,428, 10–29–74, Cl. D12—155.

High Performance Products, Inc.: *See*—
Lettmann, Klaus. 233,424.

Hirasawa, Tadashi, T. Kasahara, and M. Kato, to Aisin Seiki Kabushiki Kaisha. Sewing machine. 233,483, 10–29–74, Cl. D70—1.

Hoffman, Larry R.: *See*—
Fossella, Gregory F., Rhoads, Hoffman, MacLeod, and Forrest. 233,440.

Hoher, Herbert: *See*—
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Huffman, Donald, to Coleco Industries, Inc. Football game board with control rods. 233,453, 10–29–74, Cl. D34—5.

Huntington, Fred A., to RCBS Inc. Primer tray. 233,433, 10–29–74, Cl. D22—99.

Hutchison, Virgil J. Portable table. 233,392, 10–29–74, Cl. D6—178.

Hyman, Norman H. Earring display stand. 233,380, 10–29–74, Cl. D6—27.

Ikeda, Minoru, to France Bed Co. Ltd. Chair. 233,383, 10–29–74, Cl. D6—76.

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Ira, Saltz, to Oxford Pendaflex Corp. Pencil well. 233,430, 10–29–74, Cl. D19—85.

Jansen, George E., to The Pantasote Co. Packing tray for cans or the like. 233,416, 10–29–74, Cl. D9—187.

Jenkins, David C., and L. M. Levin, to Cox System Ltd. Audio visual work desk for dental instruction. 233,437, 10–29–74, Cl. D24—1.

Jensen, Volmer S., and I. H. Culver. Hang glider. 233,426, 10–29–74, Cl. D12—71.

Jobbins, Howell S., Jr., to Universal Optical Co., Inc. Eyeglass frame front. 233,480, 10–29–74, Cl. D57—1.

Joue, Georges H. Cigarette lighter. 233,448, 10–29–74, Cl. D27—36.

Kabushiki Kaisha Ricoh: *See*—
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Kainass, Andrew, to General Electric Co. Combined radio receiver and tape cartridge player. 233,479, 10–29–74, Cl. D56—4.

Kane, Richard T., to Mobil Oil Corp. Refuse bag holder. 233,402, 10–29–74, Cl. D7—193.

Kasahara, Takahiko: *See*—
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Keller, Huey T., to The Vaughan Furniture Co., Inc. Dresser or the like. 233,389, 10–29–74, Cl. D6—154.

Keller, Huey T., to White Furniture Co. Furniture panel. 233,394, 10–29–74, Cl. D6—192.

Keller, Huey T., to Empire Furniture Corp. Furniture panel or the like. 233,395, 10–29–74, Cl. D6—192.

Kirby, Robert E., to General Time Corp. Casing for spray dispenser. 233,435, 10–29–74, Cl. D23—150.

Kirby, Robert E., to General Time Corp. Casing for spray dispenser. 233,436, 10–29–74, Cl. D23—150.

Kluge, Eldor A., R. G. Kosirog, and T. H. Wiebe, to Canteen Corp. Display module for bank of vending machines. 233,387, 10–29–74, Cl. D6—139.

Knodt, Ruediger W., to Xerox Corp. Xerographic vapor fusing unit. 233,481, 10–29–74, Cl. D61—1.

Kohner Bros., Inc.: *See*—
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Koppa, Charles J.: *See*—
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Kosirog, Robert G.: *See*—
Kluge, Eldor A., Kosirog, and Wiebe. 233,387.

Kramer, Herbert, and H. Hoher, to Siemens Aktiengesellschaft. Wall telephone subscriber set or similar article. 233,445, 10–29–74, Cl. D26—14.

Langieri, Michael, and M. R. Meyers, to Questor Corp. Whale figure toy rattle. 233,460, 10–29–74, Cl. D34—15.

Langieri, Michael, and M. R. Meyers, to Questor Corp. Turtle figure toy rattle. 233,461, 10–29–74, Cl. D34—15.

Laughon, Thomas C., to Eastman Kodak Co. Tape drive unit or the like. 233,441, 10–29–74, Cl. D26—5.

Lawlor, John, and J. Sgombick, to Xerox Corp. Teaching aid for demonstrating principles of physics. 233,432, 10–29–74, Cl. D19—62.

Lee, Herman A., to Canadian Marconi Co. Navigation control instrument. 233,443, 10–29–74, Cl. D26—13.

Lee, Larry Y. N. Combined resilient holder and chopsticks. 233,398, 10–29–74, Cl. D7—105.

Lettmann, Klaus, to High Performance Products, Inc. Kayak. 233,424, 10–29–74, Cl. D12—63.

Levin, Lawrence M.: *See*—
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Lubs, Dietrich, to Braun Aktiengesellschaft. Digital alarm clock. 233,419, 10–29–74, Cl. D10—15.

MacConkey, James S., and D. D. Tompkins, to Esso Research and Engineering Co. Acoustic coupler or similar article. 233,446, 10–29–74, Cl. D26—14.

MacLeod, Alan R.: *See*—
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Mansolillo, Robert D., to Congoleum Industries, Inc. Soft surface floor covering or similar article. 233,488, 10–29–74, Cl. D92—4.

Marshall, Edward M. Cooking grill. 233,399, 10–29–74, Cl. D7—110.

Martin, Simon, and M. Arent. Display rack. 233,393, 10–29–74, Cl. D6—181.

Mathews, Lyle H., to Underground Devices, Inc. Telephone duct. 233,439, 10–29–74, Cl. D26—5.

Mayson, William. Golf range finder. 233,452, 10–29–74, Cl. D34—5.

McCue, Daniel E., to Rival Mfg. Co. Electric cooking and serving utensil. 233,397, 10–29–74, Cl. D7—94.

McLachlan, Sarah I. and W. D. Fur doll. 233,450, 10–29–74, Cl. D34—2.

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McQuarrie, Harvey K., and M. D. Tate, to Electrohome Ltd. Housing for a phonograph or the like. 233,478, 10–29–74, Cl. D56—4.

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Langieri, Michael, and Meyers. 233,461.

Miles, Bernard. Meat attachment for portion control in a molding machine. 233,476, 10–29–74, Cl. D35—1.

Mobil Oil Corp.: *See*—
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Mondragon, Ralph. Combined bench and table. 233,382, 10–29–74, Cl. D6—33.

Montagne, Jean B., to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Tire. 233,427, 10–29–74, Cl. D12—146.

Moore, Arthur H., to The Bridgeport Metal Goods Mfg. Co. Flashlight. 233,469, 10–29–74, Cl. D48—24.

Morse Electro Products Corp.: *See*—
Robson, Arthur. 233,466.

Moss, Jerome A. Display stand or similar article. 233,388, 10–29–74, Cl. D6—153.

Nadeau, James. Workpiece guide for table saws. 233,473, 10–29–74, Cl. D54—13.

North, Alan G. Mop support. 233,400, pub. 10–29–74, Cl. D7—180.

Owens-Illinois, Inc.: *See*—
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Oxford, Pendaflex Corp.: *See*—
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Pellicore, Albert P. Rotatable wheel for exercising. 233,459, 10–29–74, Cl. D34—15.

Pietsch, Barbara C., to Bobbie Peach Enterprises, Inc. Dispensing container. 233,413, 10–29–74, Cl. D9—30.

Pomfret, Edward E., to The Gillette Co. Combined packaging and dispensing tray for razor blade units. 233,417, 10–29–74, Cl. D9—189.

Povitz, Fred. Display case for coins or the like. 233,390, 10–29–74, Cl. D6—173.

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Roger, Harold. Bead. 233,463, 10–29–74, Cl. D45—16.
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Sagi, Zsigmond L.: *See*—
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Saito, Yasuhiro, to Kabushiki Kaisha Ricoh. Electronic calculator. 233,442, 10–29–74, Cl. D26—5.
Schroeder, Peter E., to Gardisette International AG. Curtain fabric. 233,465, 10–29–74, Cl. D47—6.
Seflin, Arthur H. Tube deburring tool. 233,475, 10–29–74, Cl. D54—4.
Sgombick, John: *See*—
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Shemitz, Sylvan R., to Sylvan R. Shemitz, and Associates, Inc. Lighting fixture. 233,468, 10–29–74, Cl. D48—23.
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Slaughter, William M. Extracting device or the like. 233,423, 10–29–74, Cl. D12—56.
Stanuseich, June: *See*—
Stanuseich, Richard S., June, and Thomas. 233,384.
Stanuseich, Richard S., J. Stanuseich, and M. A. Thomas. Support structure for cocktail bar. 233,384, 10–29–74, Cl. D6—113.
Steiner, Henry, to The Dow Chemical Co. Desk calendar or similar article. 233,431, 10–29–74, Cl. D19—20.
Stock, George, to Wilkinson Sword Ltd. Combined bottle and closure therefor. 233,415, 10–29–74, Cl. D9—160.
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Watt, Harvey M.: *See*—
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Keller, Huey T. 233,394.
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CLASS 2
2.5 3,843,969
3R 3,843,970
114 3,843,971
123 3,843,972
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CLASS 3
1 3,843,974
3,843,975

CLASS 4
3,843,976
69 3,843,977
73 3,843,978

CLASS 5
327R 3,843,980
327 3,843,979

CLASS 7
1G 3,843,981

CLASS 8
62 3,844,710
93 3,844,711
165 3,844,712
3,844,713
168 3,844,714
179 3,844,715

CLASS 9
1R 3,843,982
2A 3,843,983

CLASS 10
10R 3,843,984

CLASS 12
1R 3,843,985
146R 3,843,986

CLASS 14
71 3,843,987
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CLASS 15
50C 3,843,989
159R 3,843,990
167R 3,843,991
210.5 3,843,992
231 3,843,993
250.32 3,843,994

CLASS 16
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47 3,843,997
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253TP 3,844,718
253R 3,844,717
3,844,719
259 3,844,720
259.2 3,844,721
267R 3,844,722
270.5 3,844,723
273SP 3,844,724
300 3,844,725
301R 3,844,726

CLASS 24
134KC 3,843,999
230SC 3,844,000
233 3,844,001
263DH 3,844,002

CLASS 27
35 3,844,003

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CLASS 29
25.13 3,844,006
25.17 3,844,005
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148.4A 3,844,010
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191.6 3,844,727
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419R 3,844,021
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436 3,844,022
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471.3 3,844,024
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203.16 3,844,048
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31R 3,844,053

CLASS 36
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2.5AL 3,844,055
67D 3,844,056

CLASS 40
106.22 3,844,057

CLASS 43
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CLASS 44
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CLASS 46
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CLASS 48
202 3,844,733
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CLASS 49
28 3,844,062
115 3,844,063
182 3,844,066
348 3,844,064
364 3,844,065

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163 3,844,071
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200 3,844,087
209 3,844,077
221 3,844,078
3,844,079
222 3,844,080
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645 3,844,083
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732 3,844,085
741 3,844,086

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112 3,844,742
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210 3,844,744
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147 3,844,281
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214R 3,844,283
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CLASS 140

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98 3,844,863
178 3,844,864
229 3,844,865
238 3,844,866
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228 3,844,922
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3,844,926
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45.34 3,844,409
534 3,844,408

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11 3,844,929
3,844,930
46 3,844,931
57 3,844,932
59 3,844,933
66 3,844,934
79 3,844,935
108 3,844,936
3,844,937
139 3,844,938

CLASS 209

73 3,844,411
166 3,844,412
3,844,939
209 3,844,413
467 3,844,414

CLASS 210

22 3,844,940
40 3,844,941
50 3,844,942
67 3,844,943
73 3,844,944
3,844,945
104 3,844,946
130 3,844,947
152 3,844,948
170 3,844,950
378 3,844,949

CLASS 211

43 3,844,415
162 3,844,416

CLASS 212

18 3,844,417
55 3,844,418
122 3,844,419

CLASS 214

1A 3,844,421
1P 3,844,420
6BA 3,844,423
6P 3,844,422
38R 3,844,424
131A 3,844,425
152 3,844,426
3,844,427
301 3,844,428
313 3,844,429
500 3,844,430
511 3,844,431
517 3,844,432
522 3,844,433
731 3,844,434
776 3,844,435

CLASS 215

9 3,844,437
11C 3,844,436
221 3,844,438
344 3,844,439

CLASS 219

10.55 3,845,266
3,845,267
3,845,270
10.77 3,845,268
3,845,269
124 3,845,271
386 3,845,272
462 3,845,273
499 3,845,274

CLASS 220

3.7 3,844,440
40R 3,844,443
72 3,844,441
82A 3,844,442

CLASS 221

46 3,844,444
229 3,844,445

CLASS 232

61 3,844,446
129.4 3,844,447
153 3,844,448
175 3,844,449
183 3,844,450
193 3,844,451
321 3,844,452
399 3,844,453
453 3,844,454
525 3,844,455
545 3,844,456
570 3,844,457

CLASS 224

4J 3,844,458
29B 3,844,459
45C 3,844,460

CLASS 226

8 3,844,461
25 3,844,462
42 3,844,463
174 3,844,464
181 3,844,465

CLASS 227

40 3,844,466
3,844,467

CLASS 228

13 3,844,468
28 3,844,469

CLASS 229

22 3,844,470
30 3,844,471
34R 3,844,473
51TC 3,844,472

CLASS 235

61A 3,845,275
61.11R 3,845,280
61.12N 3,845,279
61.5S 3,845,276
61.6E 3,845,278
61.7B 3,845,277
92EA 3,845,282
92PL 3,845,281
133R 3,845,283
144MA 3,844,474
150.1 3,845,284
151 3,845,285
151.1 3,845,286
3,845,287
151.2 3,845,289
151.34 3,845,288
155 3,845,290

CLASS 236

1E 3,844,475
12R 3,844,476

CLASS 239

15 3,844,477
57 3,844,478
125 3,844,479
177 3,844,481
186 3,844,480
265.37 3,844,482
322 3,844,483
404 3,844,484
420 3,844,485
456 3,844,486
526 3,844,487

CLASS 240

26 3,845,291
51 3,845,292

CLASS 241

43 3,844,488
55 3,844,489
74 3,844,490
80 3,844,491
182 3,844,492
190 3,844,493
197 3,844,494

CLASS 242

4B 3,844,495
35.5R 3,844,496
36 3,844,497
3,844,498
47.01 3,844,504
55 3,844,499
55.54 3,844,500
56A 3,844,501
67.1R 3,844,502
3,844,503
206 3,844,505

CLASS 244

3.15 3,844,506
30 3,844,507
43 3,844,508
100A 3,844,509

CLASS 245

1 3,844,510
2 3,844,511

CLASS 246

169R 3,844,513
182A 3,844,514

CLASS 248

71 3,844,515
88 3,844,516
188.3 3,844,517
188.4 3,844,518
226R 3,844,519
228 3,844,520
429 3,844,521

CLASS 249

19 3,844,522
120 3,844,524
127 3,844,525
152 3,844,526
189 3,844,527

CLASS 250

199 3,845,293
3,845,294
211J 3,845,295
213VT 3,845,296
216 3,845,297
236 3,845,298
256 3,845,299
282 3,845,300
287 3,845,301
294 3,845,302
303 3,845,303
306 3,845,304
309 3,845,305
316 3,845,306
326 3,845,307
363 3,845,308
365 3,845,309
385 3,845,310
390 3,845,311
398 3,845,312
439 3,845,313
476 3,845,314
506 3,845,315
519 3,845,316
527 3,845,317
551 3,845,318
555 3,845,319
571 3,845,320

CLASS 251

30 3,844,528
61.1 3,844,529
149.6 3,844,530
327 3,844,531
360 3,844,532

CLASS 252

8.6 3,844,951
8.75 3,844,952
3,844,959
12 3,844,953
3,844,954
21 3,844,955
32.5 3,844,957
32.7E 3,844,958
3,844,960
46.7 3,844,961
3,844,962
3,844,963
47.5 3,844,956
48.2 3,844,964
51.5A 3,844,965
62.1 3,844,966
62.9 3,844,967
66 3,844,968
108 3,844,969
182 3,844,970
3,844,971
301.1R 3,844,972
417 3,844,973
429B 3,844,974
430 3,844,975
431C 3,844,976
438 3,844,977
455R 3,844,978
3,844,979
466B 3,844,980
471 3,844,981
544 3,844,982

CLASS 254

29A 3,844,533
93H 3,844,534
103 3,844,535
134.3PA 3,844,536
191 3,844,537

CLASS 256

13.1 3,844,538
24 3,844,539

CLASS 259

2 3,844,540
4 3,844,541
75 3,844,542

CLASS 260

2A 3,844,984
3,844,985
2P 3,844,983
2.2R 3,844,986
7.5 3,844,987
16 3,844,988
17R 3,844,990
17.4R 3,844,989
18N 3,844,991
18S 3,844,992
22CB 3,844,995

22TN 3,844,993
22R 3,844,994
23.7R 3,844,996
29.2N 3,844,997
29.4R 3,844,998
29.6NR 3,845,067
29.6WB 3,845,066
29.6F 3,844,999
30.6R 3,845,000
31.8H 3,845,003
31.8M 3,845,002
31.8R 3,845,001
32.6N 3,845,004
33.6A 3,845,005
37PC 3,845,007
37N 3,845,006
37R 3,845,008
42.15 3,845,009
42.18 3,845,010
3,845,016
42.32 3,845,011
45.75B 3,845,012
45.75K 3,845,017
45.95C 3,845,013
47CB 3,845,014
47CP 3,845,018
49 3,845,015
75NH 3,845,021
75NQ 3,845,019
75TN 3,845,020
78.5BB 3,845,159
78.5R 3,845,022
80.73 3,845,023
80.77 3,845,024
84.7 3,845,025
85.1 3,845,028
85.3R 3,845,027
85.5R 3,845,026
89.1 3,845,165
94.3 3,845,029
94.7A 3,845,030
96 3,845,031
204 3,845,032
205 3,845,034
211.5R 3,845,033
3,845,035
3,845,036
239B 3,845,037
3,845,038
239.3D 3,845,039
239.55D 3,845,040
239.57 3,845,041
240R 3,845,042
243AN 3,845,044
243C 3,845,043
243D 3,845,045
247.5R 3,845,046
247.7E 3,845,048
248AS 3,845,053
248CS 3,845,049
3,845,051
250A 3,845,050
3,845,054
250P 3,845,052
250R 3,845,047
256.4N 3,845,055
268BC 3,845,058
268PH 3,845,057
268SY 3,845,059
268R 3,845,056
293.58 3,845,060
293.67 3,845,061
293.83 3,845,062
293.84 3,845,063
293.85 3,845,064
294.8C 3,845,065
304 3,845,068
305 3,845,069
306.7 3,845,070
309.6 3,845,071
319.1 3,845,072
326.13R 3,845,073
327B 3,845,074
335 3,845,075
340.5 3,845,076
343.4 3,845,077
348C 3,845,078
348.5L 3,845,079
372 3,845,080
377 3,845,081
397.1 3,845,083
397.45 3,845,085
397.5 3,845,084
397.6 3,845,082
404.5 3,845,086
410.7 3,845,087
410.9R 3,845,088
3,845,089
448.8R 3,845,090
455A 3,845,091
455B 3,845,092
465C 3,845,094
465F 3,845,093
465.7 3,845,095
468D 3,845,096
471C 3,845,097
473R 3,845,099
475B 3,845,100
479C 3,845,101
3,845,103
479R 3,845,102
482R 3,845,104
3,845,105
486D 3,845,106
488H 3,845,108
488J 3,845,107
500.5H 3,845,109
501.12 3,845,110
501.14 3,845,111
502R 3,845,112
507 3,845,113
513R 3,845,114
514D 3,845,115
515R 3,845,116
524R 3,845,117
526N 3,845,118
527R 3,845,119
530N 3,845,120
532 3,845,121
543H 3,845,122
562P 3,845,123
563P 3,845,124
564E 3,845,125
566AE 3,845,126
566B 3,845,127
570AB 3,845,128
575 3,845,129
583M 3,845,130
586C 3,845,135
586R 3,845,131
3,845,132
3,845,133
3,845,134
590 3,845,136
599 3,845,137
600 3,845,138
606.5B 3,845,139
610B 3,845,140
611R 3,845,141
619B 3,845,142
624C 3,845,143
634 3,845,144
3,845,145
650R 3,845,146
652.5R 3,845,147
658R 3,845,148
668A 3,845,149
673.5 3,845,150
675.5 3,845,151
677R 3,845,152
680B 3,845,154
680E 3,845,153
3,845,156
682 3,845,155
683.49 3,845,158
683.9 3,845,157
823 3,845,160
825 3,845,161
857PG Re.28,212
857L 3,845,163
863 3,845,162
876R 3,845,164
897C 3,845,166
927N 3,845,167
927R 3,845,168
932 3,845,169
933 3,845,170
943 3,845,171
956 3,845,172
3,845,173
963 3,845,174
968 3,845,175
984 3,845,176

CLASS 264

.5 3,845,177
3,845,178
14 3,845,179
41 3,845,180
44 3,845,181
45.1 3,845,182
46.6 3,845,183
54 3,845,184
86 3,845,185
104 3,845,186
154 3,845,187

CLASS 267

64R 3,844,543
3,844,544
147 3,844,545

CLASS 269

22 3,844,546
25 3,844,547
91 3,844,548
247 3,844,549
328 3,844,550

CLASS 271

99 3,844,551
179 3,844,553
245 3,844,552

CLASS 272

1R 3,844,554

CLASS 273

67A 3,844,555
73G 3,844,556
86R 3,844,557
87R 3,844,558
102.1E 3,844,559
104 3,844,560
105.6 3,844,561
110 3,844,562
131B 3,844,563
134A 3,844,564
3,844,567
135R 3,844,568
176F 3,844,565
192 3,844,569

CLASS 274

1R 3,844,570
9R 3,844,566
39R 3,844,571

CLASS 277

27 3,844,572
216 3,844,573

CLASS 280

11.13L 3,844,576
11.2 3,844,574
11.35N 3,844,575
33.99R 3,844,577
43.22 3,844,578
124B 3,844,583
124R 3,844,579
150AB 3,844,580
3,844,581
150.5 3,844,582
434 3,844,584

CLASS 285

3 3,844,585
8 3,844,586
47 3,844,587
162 3,844,588
184 3,844,589
197 3,844,590

CLASS 290

40 3,845,321

CLASS 292

7 3,844,591
39 3,844,592
48 3,844,593
66 3,844,594
216 3,844,595
3,844,596
251.5 3,844,597
295 3,844,598

CLASS 294

19R 3,844,599
67D 3,844,600
78R 3,844,601
110A 3,844,602

CLASS 296

23MC 3,844,603
26 3,844,604
137R 3,844,605
146 3,844,606

CLASS 297

61 3,844,607
92 3,844,608
192 3,844,609
213 3,844,610
214 3,844,611
445 3,844,612
452 3,844,613
3,844,614

CLASS 298

10 3,844,615
3,844,616
11 3,844,617

CLASS 299

64 3,844,618
92 3,844,619

CLASS 301

135M 3,844,620

CLASS 302

2R 3,844,621
45 3,844,622

CLASS 303

21A 3,844,624
21F 3,844,623
3,844,625
68 3,844,626

CLASS 307

108 3,845,322
120 3,845,323
205 3,845,324
220C 3,845,325
230 3,845,326
238 3,845,327
251 3,845,328
279 3,845,329
289 3,845,330
304 3,845,331

CLASS 308

3.6 3,844,627
6C 3,844,628
3,844,629
184 3,844,630
187.1 3,844,631
191 3,844,632

CLASS 310

8.7 3,845,332
9.5 3,845,333
46 3,845,334
49 3,845,335
52 3,845,336
105 3,845,337
154 3,845,338
156 3,845,339
217 3,845,340

CLASS 312

209 3,844,633
351 3,844,634

CLASS 313

32 3,845,341
184 3,845,342
221 3,845,343
231 3,845,344
325 3,845,345
424 3,845,346
483 3,845,347

CLASS 315

200A 3,845,349
291 3,845,350
293 3,845,351
393 3,845,352

CLASS 317

2R 3,845,353
13B 3,845,354
18A 3,845,355
20 3,845,356
27R 3,845,357
61 3,845,358
101DH 3,845,359
124 3,845,360
134 3,845,361
3,845,362
136 3,845,363
230 3,845,364
258 3,845,365

CLASS 318

99 3,845,366
127 3,845,367
139 3,845,368
174 3,845,369
327 3,845,370
391 3,845,371
398 3,845,372
434 3,845,373
445 3,845,374
463 3,845,375
591 3,845,376
662 3,845,377
676 3,845,348
685 3,845,378

CLASS 321

45C 3,845,379

CLASS 323

7 3,845,380

CLASS 324

34R 3,845,381
37 3,845,382
38 3,845,383
41 3,845,384
65R 3,845,385
71CP 3,845,386
95 3,845,387
106 3,845,388

CLASS 325

16 3,845,389
42 3,845,390
64 3,845,391
158 3,845,392
453 3,845,393
455 3,845,394

CLASS 328

14 3,845,395
15 3,845,396
117 3,845,397
127 3,845,398
138 3,845,399
151 3,845,400

CLASS 330

2 3,845,401
10 3,845,402
31 3,845,403
69 3,845,404
207P 3,845,405

CLASS 331

94.5C 3,845,409
94.5E 3,845,406
3,845,407
3,845,408
116R 3,845,410

CLASS 332

7.51 3,845,411
9R 3,845,412

CLASS 333

1.1 3,845,413
6 3,845,414
3,845,415
14 3,845,416
24.1 3,845,417
30R 3,845,418
3,845,419
3,845,420
31R 3,845,421
73W 3,845,422
3,845,423
83R 3,845,424
95S 3,845,426
98S 3,845,427

CLASS 334

7 3,845,428
16 3,845,429

CLASS 335

108 3,845,430
152 3,845,431
154 Re.28,220
176 3,845,432
254 3,845,433

CLASS 336

30 3,845,434
65 3,845,435
84 3,845,436
147 3,845,437
209 3,845,438

CLASS 337

291 3,845,439
341 3,845,440
347 3,845,441

CLASS 338

23 3,845,442
25 3,845,443
32H 3,845,445
32R 3,845,444
153 3,845,446
200 3,845,447
222 3,845,448

CLASS 339

14L 3,845,449
42 3,845,450
49R 3,845,451
59R 3,845,452
3,845,453
85 3,845,454
97R 3,845,456
97 3,845,455
103R 3,845,457
117R 3,845,458
191R 3,845,459
192R 3,845,460

CLASS 340

1R 3,845,461
3R 3,845,462
5R 3,845,463
59 3,845,464
146.2 3,845,465
146.3S 3,845,466
147R 3,845,467
148 3,845,468
149A 3,845,469
3,845,470
149R 3,845,471
163 3,845,472
167R 3,845,473
172.5 3,845,425
3,845,474
3,845,475
173BB 3,845,476
174TF 3,845,477
3,845,478
213R 3,845,479
236 3,845,480
311 Re.28,213

CLASS 343

7.3 3,845,481
18E 3,845,482
106D 3,845,486
106R 3,845,484
3,845,485
113DE 3,845,487
708 3,845,488
713 3,845,489
754 Re.28,217
761 3,845,483
821 3,845,490

CLASS 346

21 3,845,491
33WL 3,845,492
75 Re.28,219
137 3,844,512

CLASS 350

104 3,844,635
117 3,844,644
160LC 3,844,637
160 3,844,636
171 3,844,638
181 3,844,639
214 3,844,640

CLASS 351

33 3,844,641

CLASS 352

78R 3,844,642
3,844,643

CLASS 353

10 3,844,645
86 3,844,646
101 3,844,647
116 3,844,648
120 3,844,649
122 3,844,650

CLASS 354

213 3,845,493

CLASS 355

3P 3,844,651
3 3,844,652
8 3,844,653
24 3,844,654
43 3,844,655
53 3,844,656
132 3,844,657

CLASS 356

4 3,844,658
32 3,844,659
93 Re.28,216
106 3,844,660
184 3,844,661
246 3,844,662

CLASS 357

23 3,845,495
30 3,845,494
3,845,496

CLASS 358

4 3,845,237
8 3,845,497
11 3,845,498

CLASS 360

56 3,845,499
77 3,845,500
85 Re.28,215
3,845,501
86 3,845,502
115 3,845,503

CLASS 403

157 3,844,663
171 3,844,664
267 3,844,665
355 3,844,666

CLASS 404

16 3,844,667
72 3,844,668
94 3,844,669
104 3,844,670
117 3,844,671

CLASS 408

155 3,844,672

CLASS 415

1 3,844,673
53T 3,844,674
108 3,844,675
156 3,844,676

CLASS 416

84 3,844,677
97 3,844,678
3,844,679
157 3,844,680
3,844,681
178 3,844,682

CLASS 417

6 3,844,683
13 3,844,684
204 3,844,685
298 3,844,686
301 3,844,687
313 3,844,688
572 3,844,689

CLASS 418

48 3,844,690
97 3,844,691
113 3,844,692
142 3,844,693
149 3,844,694
180 3,844,695
181 3,844,696

CLASS 423

42 3,845,188
150 3,845,189
184 3,845,190
240 3,845,191
261 3,845,193
300 3,845,194
308 3,845,195
573 3,845,196
575 3,845,197
634 3,845,198
645 3,845,199
653 3,845,200

CLASS 424

1	3,845,202
22	3,845,201
122	3,845,203
177	3,845,204
180	3,845,205
200	3,845,206
	3,845,207
243	3,845,208
244	3,845,192
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	113	233,407
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	189	233,417
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41 : 3,844,026
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42 : 3,843,975
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45 : 3,844,102
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47 : 3,844,442
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48 : 3,843,970
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3,844,858	3,845,299	3,844,186	3,844,375	3,844,266	3,844,609
3,844,868	3,845,374	3,844,233	3,844,376	3,844,288	3,844,642
3,844,874	3,845,381	3,844,264	3,844,482	3,844,418	3,844,704
3,844,924	3,845,395	3,844,405	3,844,859	3,844,453	3,844,889
3,844,928	3,845,414	3,844,443	3,845,268	3,844,472	3,845,282
3,844,929	3,845,440	3,844,478	54 : 3,844,719	3,844,501	3,845,337
3,844,930	49 : 3,844,396	3,844,713	3,845,019	3,844,534	3,845,372
3,844,955	3,844,407	3,844,878	3,845,056	3,844,547	3,845,431
3,845,059	3,844,622	3,845,264	3,845,095	3,844,550	3,845,467
3,845,106	3,845,399	3,845,352	55 : 3,843,971	3,844,566	3,845,472
3,845,153	50 : 3,844,217	52 : 3,844,733	3,844,004	3,844,591	56 : 3,844,367
3,845,154	51 : 3,844,090	53 : 3,843,973	3,844,042	3,844,604	3,844,567
3,845,188	3,844,093	3,844,210	3,844,059		
3,845,289	3,844,155	3,844,269	3,844,091		

DESIGN PATENTS

4 : 233,429	233,486	233,440	233,467	233,463	233,446
5 : 233,418	7 : 233,462	26 : 233,391	233,472	233,466	233,470
6 : 233,384	9 : 233,406	233,482	233,476	233,479	40 : 233,450
233,397	233,468	28 : 233,444	233,488	233,481	41 : 233,451
233,398	233,469	29 : 233,434	35 : 233,382	233,487	233,484
233,401	233,473	31 : 233,404	36 : 233,379	37 : 233,389	42 : 233,412
233,405	12 : 233,399	34 : 233,416	233,388	233,394	233,438
233,426	233,425	233,420	233,402	233,395	43 : 233,480
233,433	17 : 233,381	233,421	233,407	233,408	48 : 233,386
233,439	233,387	233,422	233,414	233,409	233,413
233,454	233,411	233,449	233,430	233,423	233,428
233,471	233,459	233,457	233,432	233,435	233,447
233,474	20 : 233,392	233,460	233,441	233,436	55 : 233,380
233,475	25 : 233,393	233,461	233,458	39 : 233,385	233,410
233,477	233,403				

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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*